Hope Bay Project

Spill Contingency Plan

Report Prepared for

Hope Bay Mining Ltd.

Report Prepared by

SRK Consulting (Canada) Inc.
1CH008.050
August 2011

Hope Bay Project

Spill Contingency Plan

Hope Bay Mining Ltd.

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SRK Project Number 1CH008.050

August 2011

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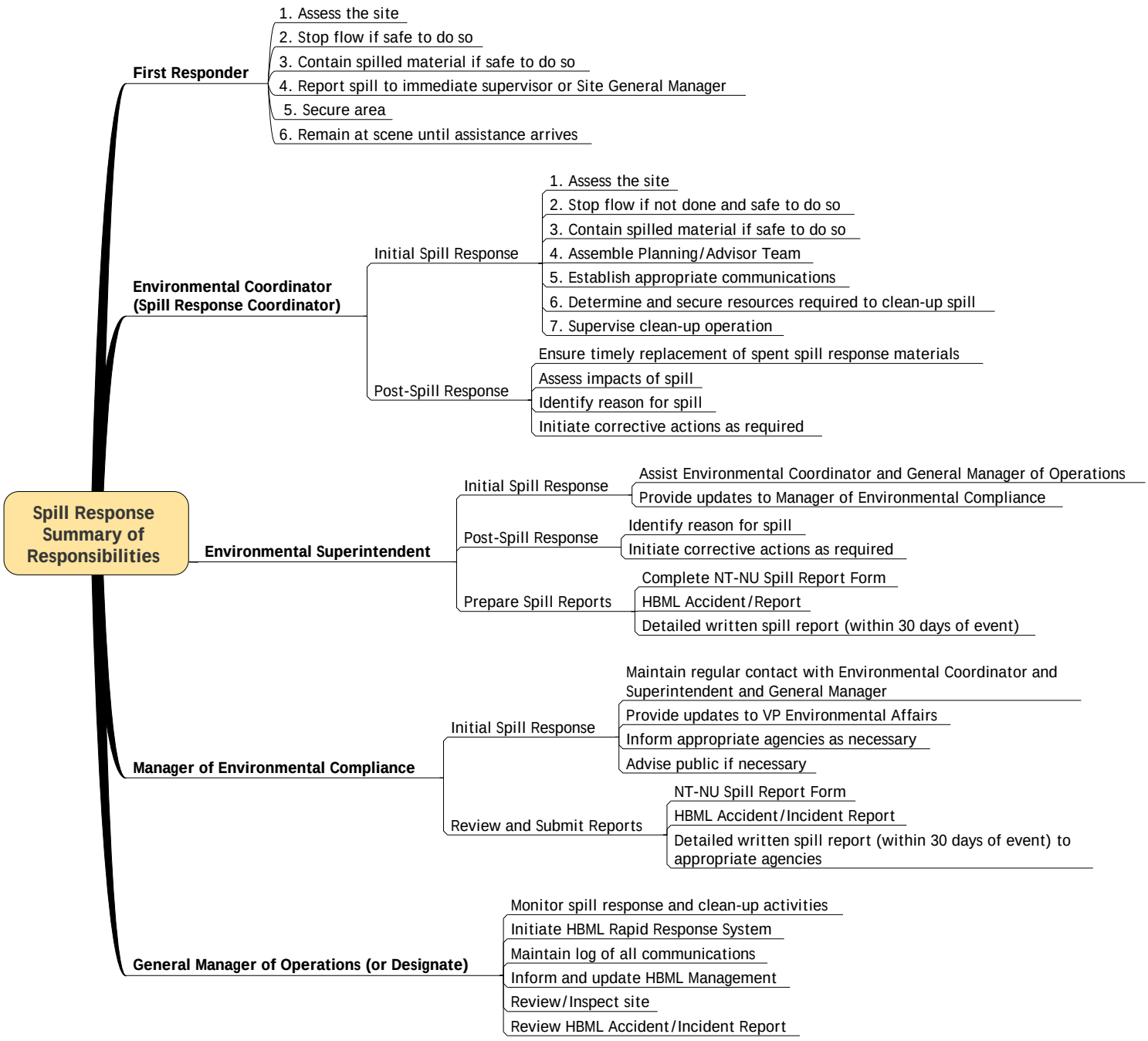
Principal Consultant

Revised:
Melissa Pitz
Consultant

Hope Bay Mining Ltd. Spill Response Responsibilities

Spill Response - Summary of Responsibilities



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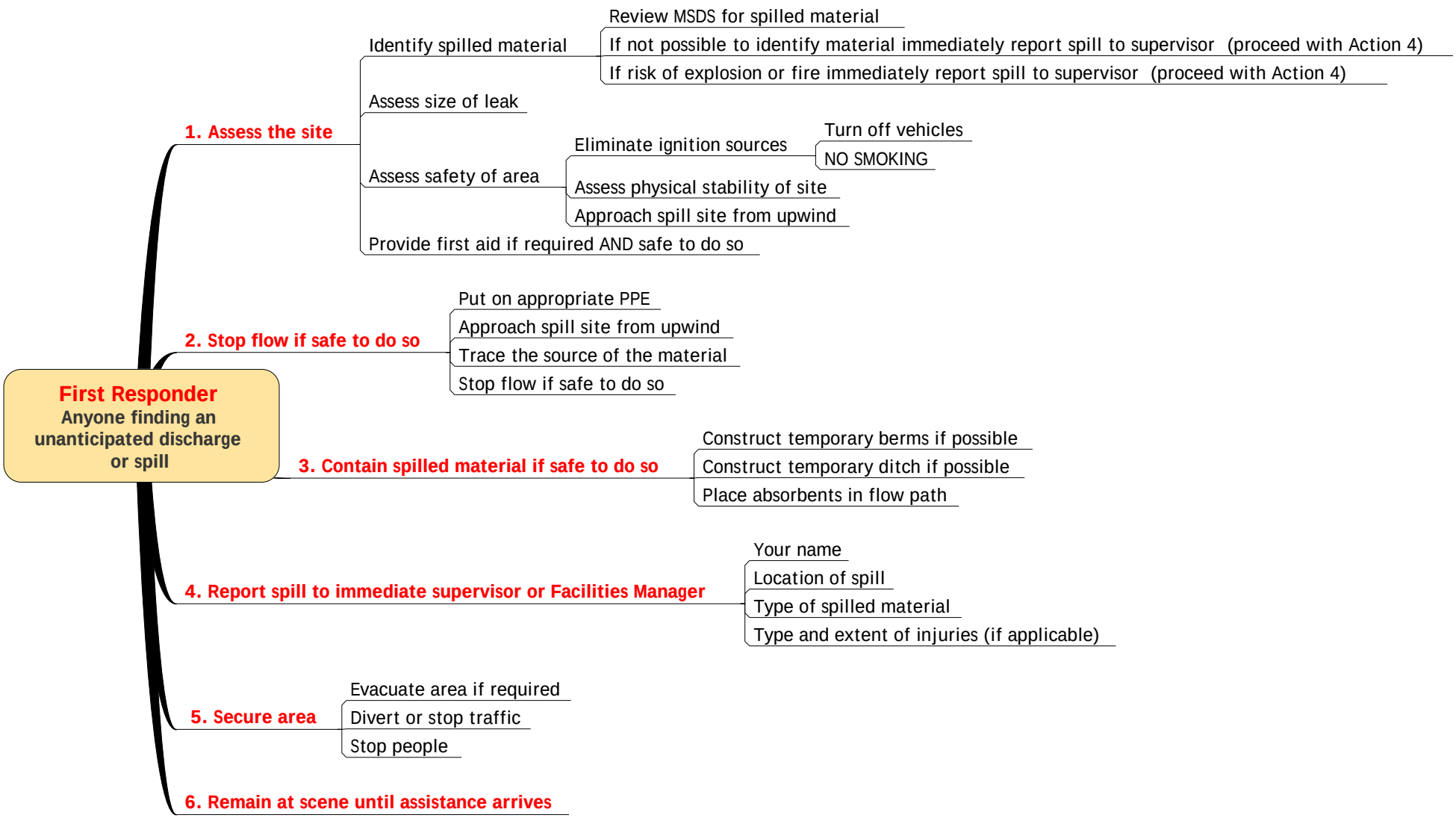
NEWMONT NORTH AMERICA

Hope Bay Mining Ltd. Spill Response Responsibilities

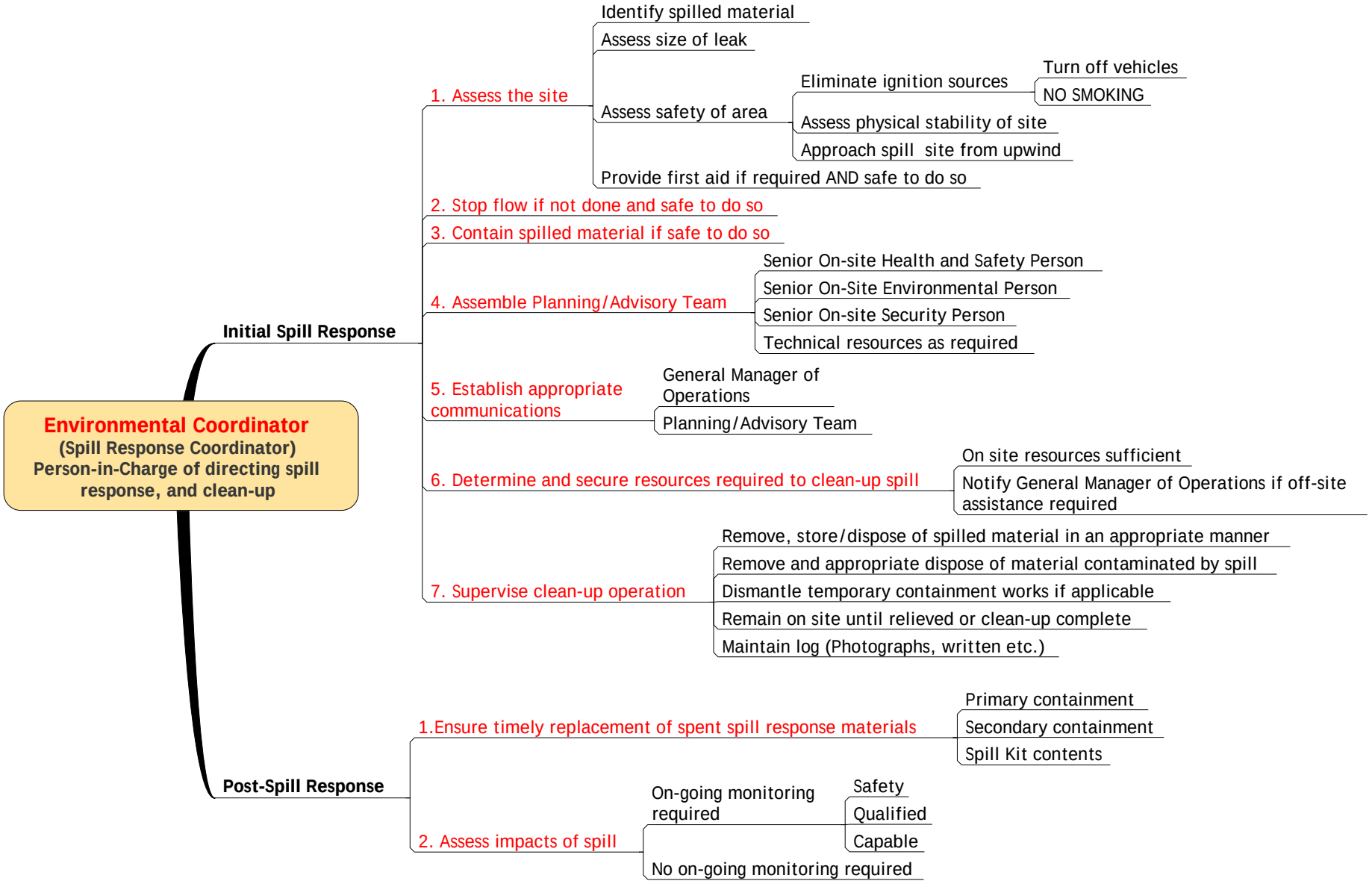
First Responder



NEWMONT NORTH AMERICA

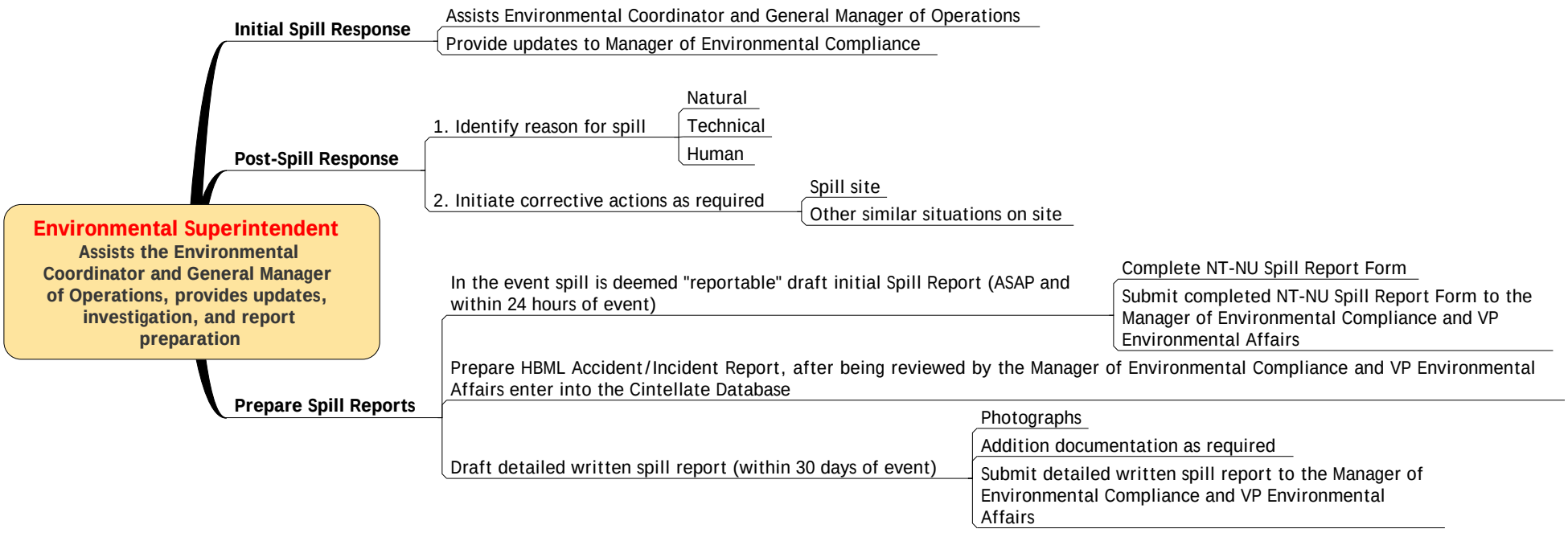
Hope Bay Mining Ltd. Spill Response Responsibilities

Environmental Coordinator
(Spill Response Coordinator)



Hope Bay Mining Ltd. Spill Response Responsibilities

Environmental Superintendent



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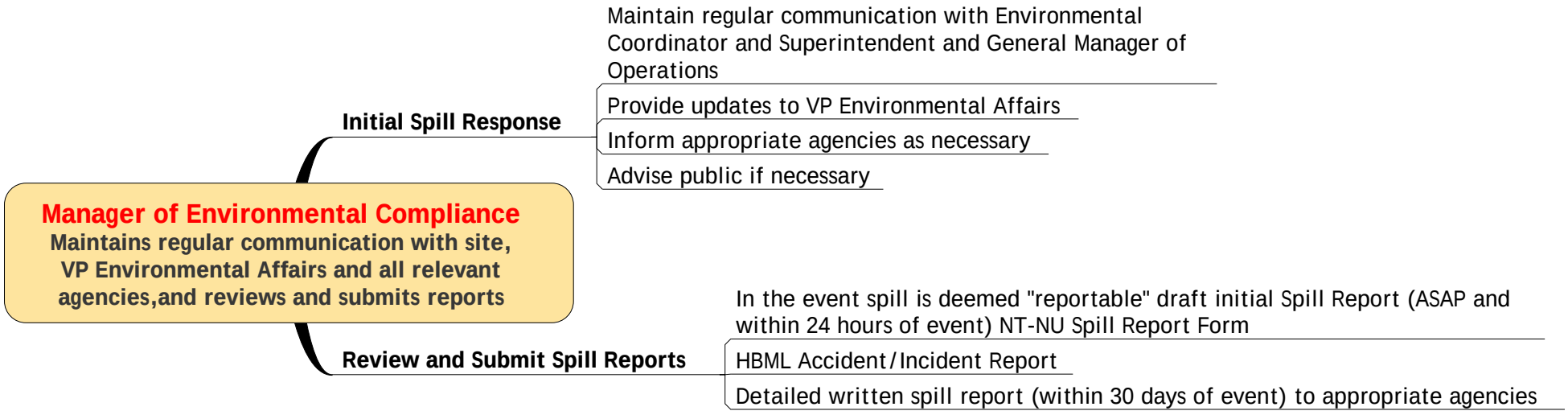
Hope Bay Mining Ltd. Spill Response Responsibilities

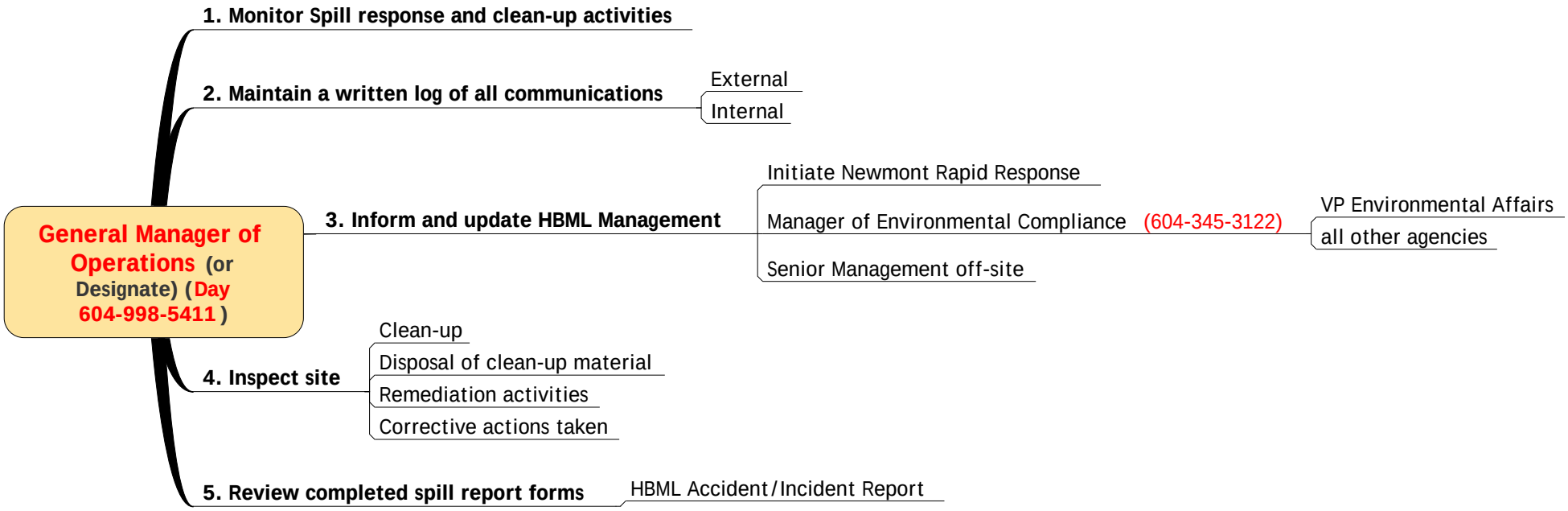
Manager of Environmental Compliance



NEWMONT. NORTH AMERICA

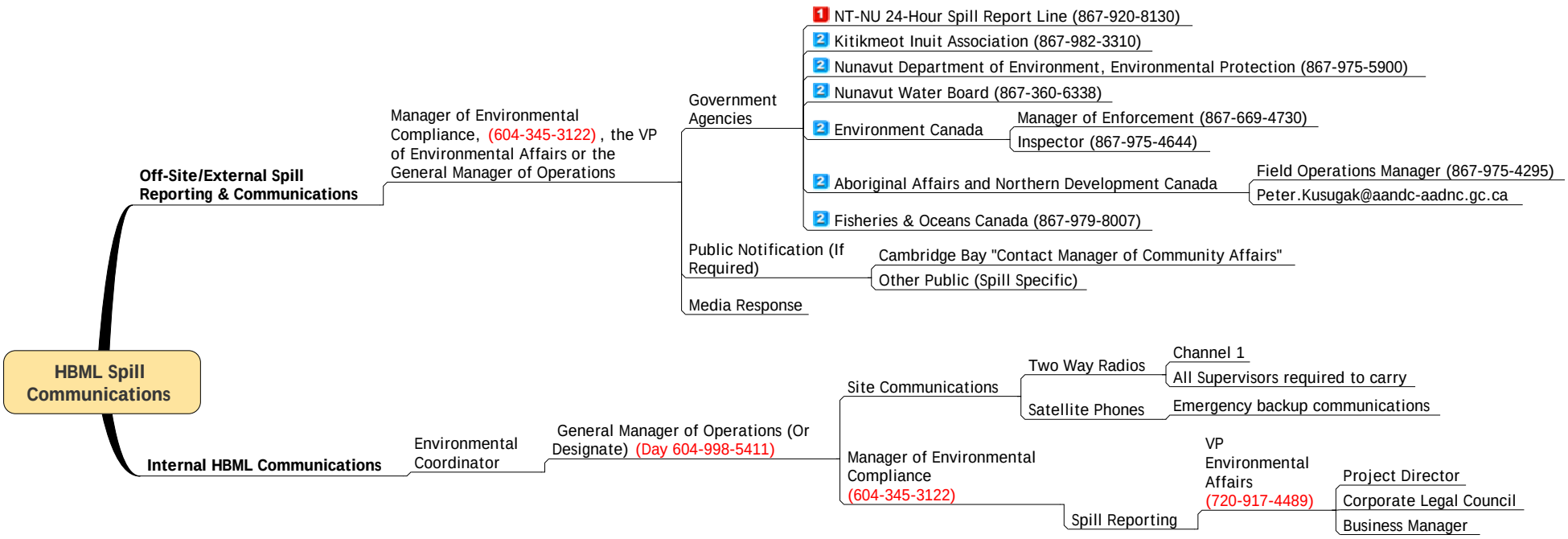
Hope Bay Mining Ltd. Spill Response Responsibilities

General Manager of Operations



Hope Bay Mining Ltd. Spill Response Responsibilities

Spill Response Communications & Reporting SOP



1 Contact within 24 hours of event if spill is deemed reportable

2 Then contact other regulators

Quick References

Site Emergency Phone Numbers

	Day	Camp Room Number
General Main Line	604-998-5400	
Medic (Doris)	Ext 87220 or 87221	C9
Medic (Boston)	604 759 2336	
Emergency Response Team/ Health & Safety	Ext 87207 or 87211	C11
Mine Operations Manager	Ext 87301 or 87302	C1
General Manager of Operations	Ext 85411	C8
ESR	Ext 87177 or 87178	C4
Security	Ext 87154 or 87153	C10
Facilities Manager (Doris)	Ext 87411 or 87410	C3
Facilities Manager (Boston)	604 759 2338	

Site Radio Channels (Digital System)

Channel 1	Doris Emergency
Channel 2	Security
Channel 3	Doris Airstrip
Channel 4	Buses
Channel 5	Nuna Site Services
Channel 6	HSLP and Medic (non-emergency)
Channel 7	ESR
Channel 8	General Facility Management
Channel 9	Nuna Construction/EPCM
Channel 16	Broadcast (non-emergency)
Channel 40	Exploration Supervisors
Channel 43	Helishack
Channel 44	Survey
Analog Channel 6	Boston Emergency
Analog Channel 7	Boston Camp

Key Government Contacts

Organization		Location	Telephone	Fax
NT-NU Spill Centre	24 hour Spill Report Line	Yellowknife	867-920-8130	867-873-6924
Canadian Coast Guard – Central and Arctic Region (Any discharge to the marine environment during fuel transfer between vessel and OHF)	24 hour Spill Report Line		800-265-0237	
GN Department of Environment	Manager of Pollution Control	Iqaluit	867-975-7748	
Nunavut Water Board	Executive Director	Gjoa Haven	867-360-6338	867-360-6369
Kitikmeot Inuit Association (KIA)	Sr. Lands Officer	Kugluktuk	867-982-3310	867-982-3311
AANDC (Aboriginal Affairs and Northern Development Canada - formerly INAC)	Field Operations Manager	Iqaluit	867-975-4295	867-979-6445
AANDC (Aboriginal Affairs and Northern Development Canada - formerly INAC)	Inspector	Iqaluit	(867) 975-4548	(867) 979-6445
Environment Canada	Manager of Enforcement	Yellowknife	867-669-4730	867-669-3663
Environment Canada	Inspector	Iqaluit	867-975-4644	867-975-4594
DFO (Fisheries & Oceans Canada)	Enforcement Officer	Iqaluit	867-979-8007	867-989-8039

Reportable Spills (Spill Reporting Regulations Schedule B)

Description of Contaminant	Amount Spilled
Explosives	Any amount
Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 litres.
Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 litres.
Compressed gas (toxic)	Any amount
Compressed gas (corrosive)	Any amount
Flammable liquid	100 litres
Flammable solid	25 kilograms
Spontaneously combustible solids	25 kilograms
Water reactant solids	25 kilograms
Oxidizing substances	50 litres or 50 kg
Organic peroxides	1 litre or 1 kilogram
Poisonous substances	5 litres or 5 kilograms
Infectious substances	Any amount
Radioactive	Any amount
Corrosive substances	5 litres or 5 kilograms
Miscellaneous products or substances excluding PCB mixtures	50 litres or 50 kilograms
Environmentally hazardous	1 litre or 1 kilogram
Dangerous wastes	5 litres or 5 kilograms
PCB mixtures of 5 or more parts per million	0.5 litres or 0.5 kilograms
Other Contaminants	100 litres or 100 kilograms

In the event that a particular material spill meets or exceeds the amount specified in the above table the VP Environmental Affairs will immediately report the spill by telephone to the NT-NU 24 Hour Spill Report Line, Yellowknife, Tel: 867-920-8130 (Fax: 867-873-6924) using the NT-NU Spill Report form. A sample NT-NU Spill Report form is provided as Appendix C.

Any spill or discharge that occurs to the marine environment during the annual fuel offload, the On-Shore Supervisor must immediately contact the regional Canadian Coast Guard station at Tel: 800-265-0237.

Environment Canada recommends that all releases of harmful substances, regardless of quantities, be immediately reportable where the release:

1. is near or into a water body;
2. is near or into a designated sensitive environment or sensitive wildlife habitat;
3. poses an imminent threat to human health or safety; or
4. poses an imminent threat to a listed species at risk or its critical habitat.

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Appendices

1 Introduction

1.1 Spill Contingency Plan Objectives

This Hope Bay Spill Contingency Plan (Plan) is intended to provide all Hope Bay Project operating staff with a summary of spill response procedures for the sites. It also provides a summary of the same to the regulatory agencies and to the land owners who have regulatory interest over the site, its facilities and operations.

In general terms, the principles of this plan are to insure that:

- Human life is protected and the potential for injury is minimized to the extent possible.
- All adverse environmental impacts are kept to a minimum.
- Resources are used effectively and efficiently.
- All required corporate and regulatory reporting is completed on time and in the prescribed manner.

The focus of this Plan is to provide:

- A framework to be followed to ensure that accountability for the performance of the spill response activities are defined and communicated to site staff before an event occurs.
- A clear set of procedures for every employee should he/she identify an unanticipated discharge or spill (i.e. First Responder procedures).
- A clear chain of command, contacts and reporting procedures to be followed for all responses to spills.
- A defined list of responsibilities to be followed in conducting spill clean-up activities and ensure that the list is communicated to site staff before an event occurs.
- Information on available resources and potential operational hazards/risks that may be encountered during spill response activities.
- Reporting and record keeping requirements for spills and spill response activities to facilitate tracking of response progress, incident investigation and mitigation planning after an event.
- A defined method to review all spill events and implement initiatives to reduce repeat occurrences.
- A plan to ensure the regular review and update of the Hope Bay Project Spill Contingency Plan and to complete two annual inspections of all spill kits (location and inventory) and to inventory all on-site hazardous materials.

Prompt, effective and organized responses to an unanticipated discharge or spill by the company and all site personnel will enhance the health and safety of all employees, serve to minimize, to the extent possible, the potential adverse environmental impacts resulting from such an event and ensure effective communication with the appropriate regulatory agencies and the general public.

This Hope Bay Project Spill Contingency Plan has been prepared by HBML in accordance with Water Licences 2BE-HOP0712, 2BB-BOS0712, and 2AM-DOH0713 issued to HBML by the Nunavut Water Board (NWB).

1.2 Project Location

The Hope Bay Project is currently an advanced exploration project located on Inuit Owned Land in the West Kitikmeot region of Nunavut approximately 125 km southwest of Cambridge Bay and 75 km northeast of Umingmaktok (Figure 1). The various elements of the Hope Bay Project are centred at

approximately N 680 09’ and W 1060 40’ and extend from the head of Roberts Bay (an extension of Melville Sound) in the north to the Boston site located approximately 70 km to the south.

The Hope Bay mineral exploration rights property comprises an area of 1,078 km^2 and forms a contiguous block that is approximately 80 km long by up to 20 km wide and consists primarily of the Roberts Bay area (Figure 2) the Doris camp (Figure 3), Windy Camp (Figure 4) and the Boston Camp (Figure 5).

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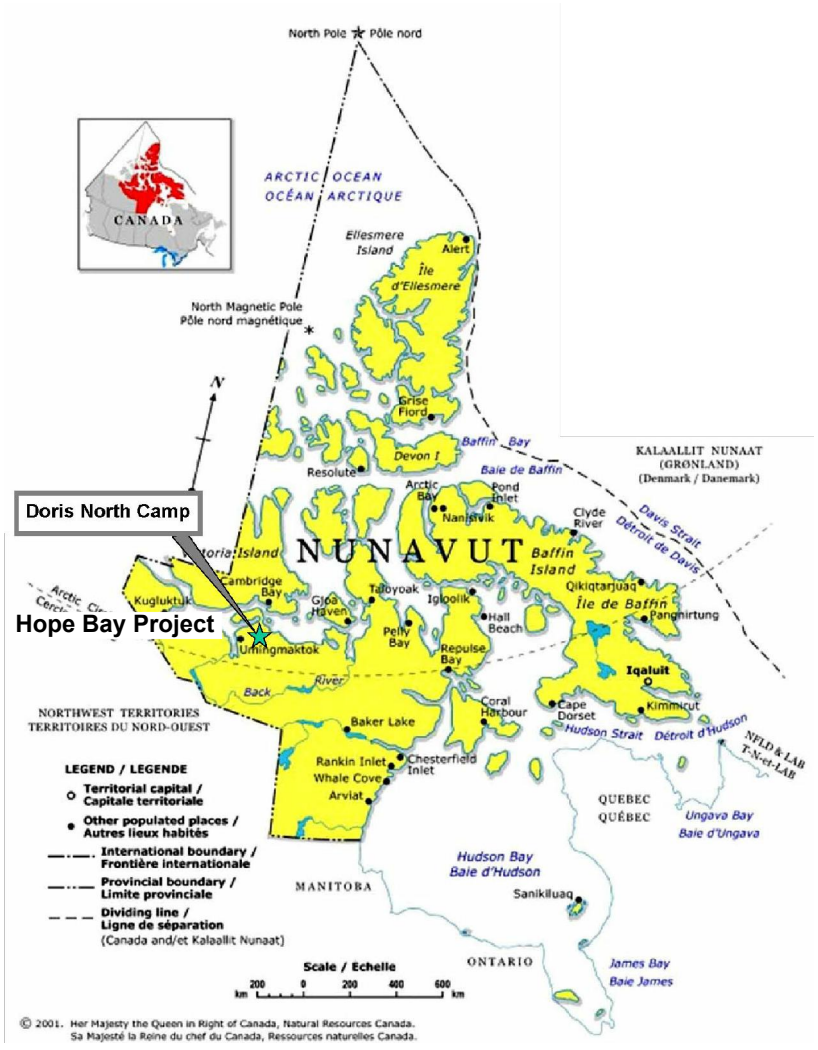
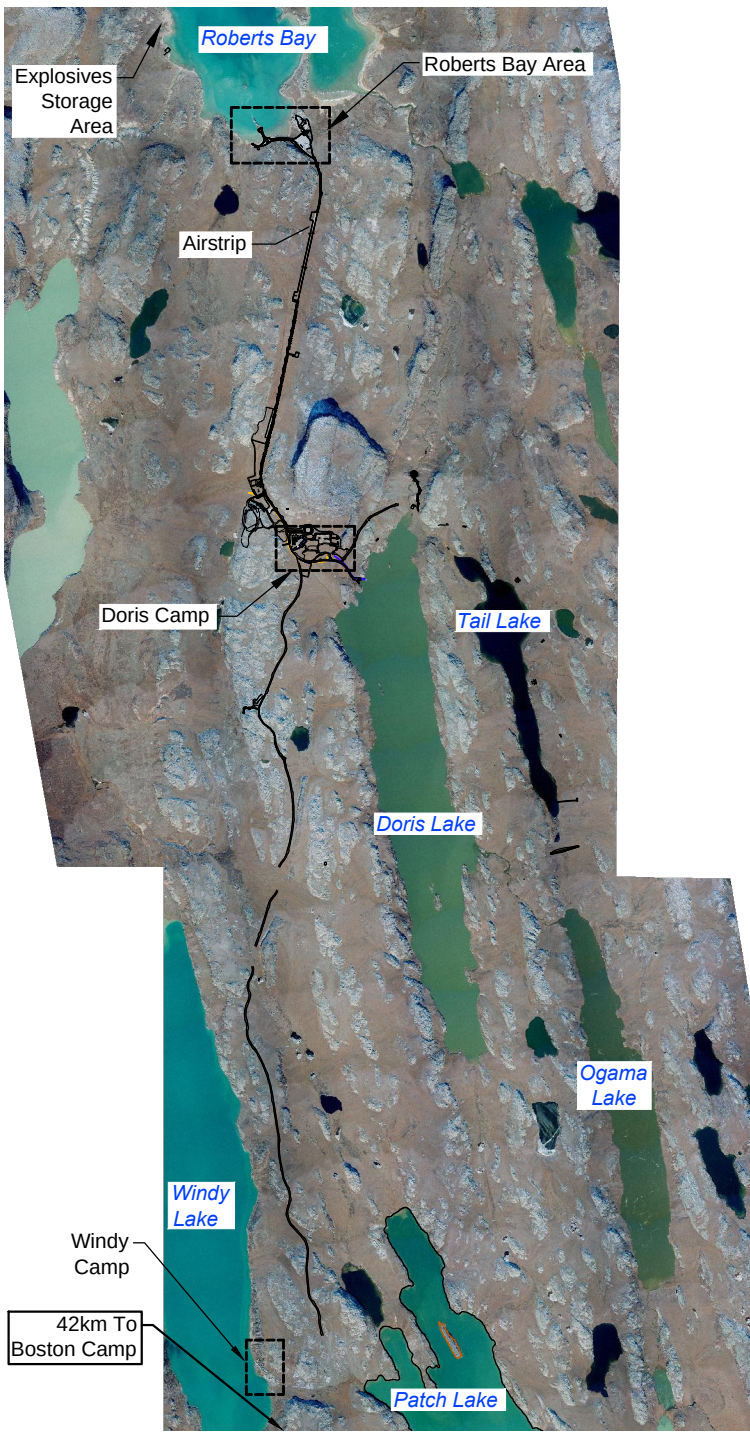
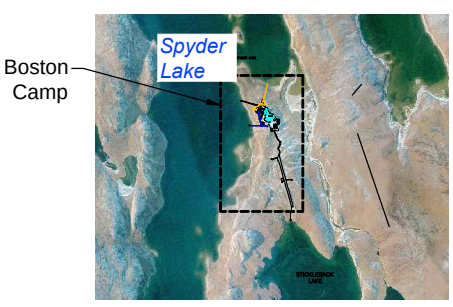
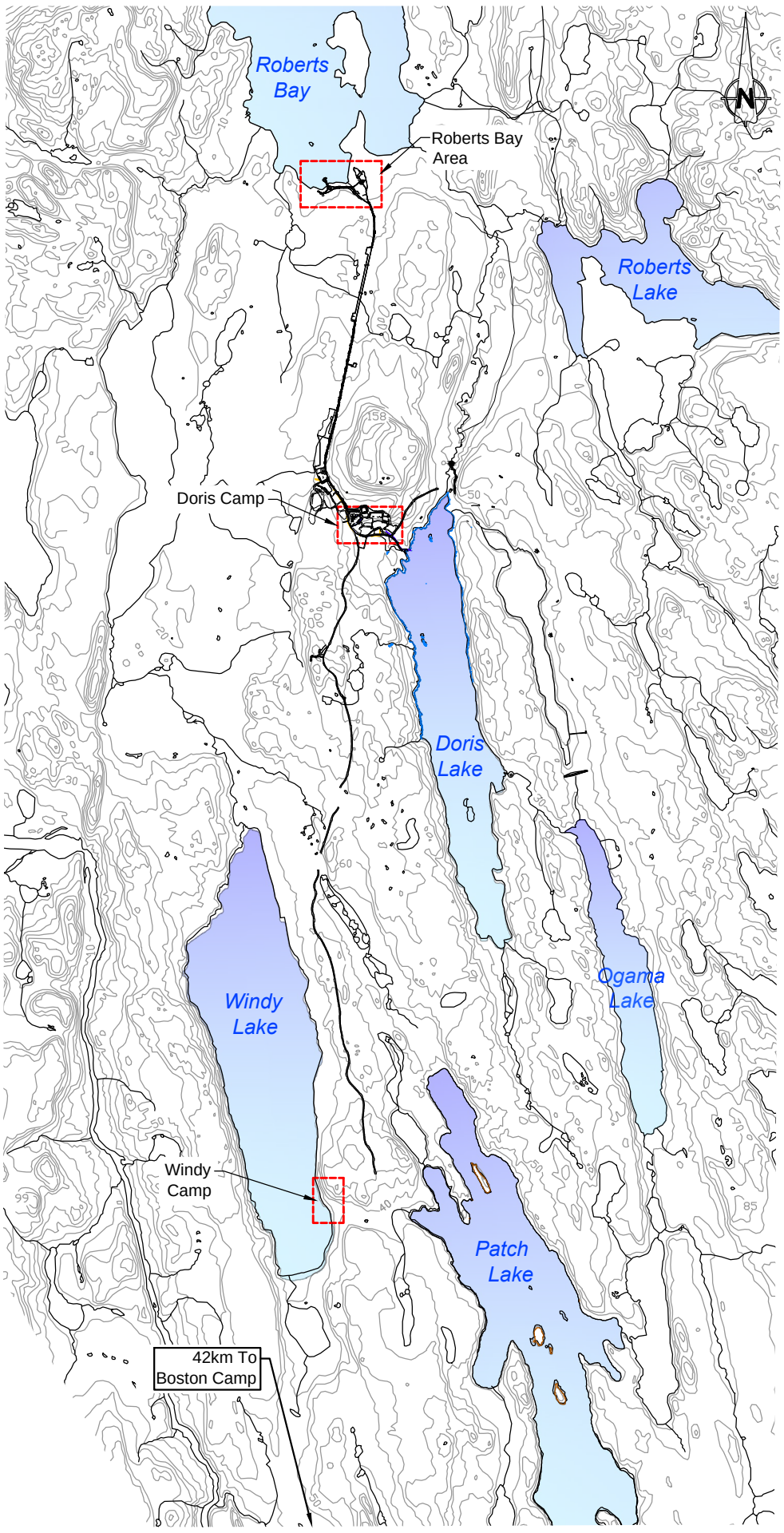
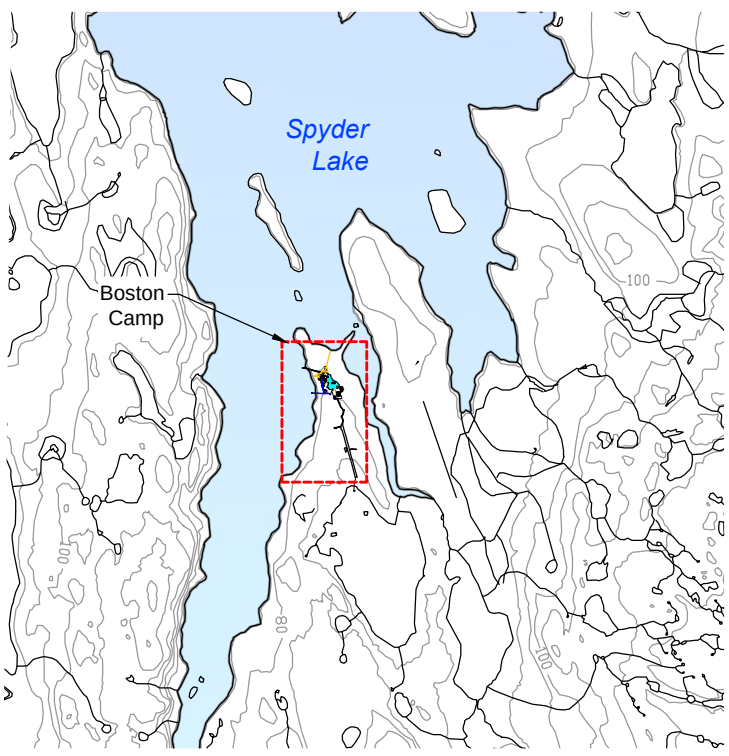


LOCATION MAP









Topographic Information Supplied by BHP World Minerals Inc.
National Topographic Series (NTS) Maps
North American Datum (NAD) 1927

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HOPE BAY MINING LTD.

Hope Bay Project

Spill Contingency Plan

Hope Bay Project Location

DATE:	APPROVED:	FIGURE:
June 2011	MP/ML	1

Roberts Bay

Temporary Spill Seacan including 5 Fire Cabinets

Overburden Dump Area

Sedimentation Berm

5 Million Litre Tank

Exisitng Overburden Dump

Fuel Pipe

Fuel Transfer Station

Fuel Drum Storage

Fuel Store

Temporary Spill Seacan including 5 fire systems placed on the jetty during offload

Jetty

Expanded Laydown Area

Nuna Equipment Area

Incinerator

Roberts Bay Laydown Area

Cylinder Parts

Beach Laydown Area

Storage Seacans

Ganset Shack

Seacan Area

Shop

Storage Seacans

Waste Storage Area

Tank Farm

Marine Spill Seacans

N

LEGEND

- Spill Kit Locations
- Fire Management Kits

0 20 40 60 80 100

Scale in Metres

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HOPE BAY MINING LTD

HOPE BAY PROJECT

Spill Contingency Plan

Roberts Bay Site Layout

DATE: June 2011

APPROVED: MP/ML

FIGURE: 2

\\SSK-SVR01 Saskatoon Projects\01_SITES\Hope Bay\010_Base_Files\Acad\1CH008.050\1CH008.050_Spill_Contingency_Plan.dwg

To Airstrip
(see inset)

Crusher Pad

Land Farm

Camp Unit
Sub-station

Fuel Tank Farm

Camp

Utilidor

Construction Powerhouse

Sewage Treatment Plant
(STP Treatment Chemicals)

Firewater Tank And Pumphouse

Muster Station

Cold Storage Building

Aviation Fuel

Helipads

Fuel Transfer
Station

Power Supply Gensets

Marine Spill
Kit Required

Gen Set
Fuel Tank

Doris Lake

Airstrip

Crusher Pad

Airstrip Inset

LEGEND

- Spill Kit Locations
- Fire Management Kits

0 50 100 150 200 250

Scale in Metres

srk consulting

SRK JOB NO.: 1CH008.050

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HOPE BAY MINING LIMITED

HOPE BAY PROJECT

Spill Contingency Plan

Doris Camp Site Layout

DATE: June 2011 | APPROVED: MP/ML | FIGURE: 3

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LEGEND

- Spill Kit Locations
- Fire Management Kits

0 10 20 30 40 50
Scale in Metres

srk consulting	**HOPE BAY MINING LTD**	Spill Contingency Plan
SRK JOB NO.: 1CH008.010–400	HOPE BAY PROJECT	Windy Camp Site Layout
FILE NAME: 1CH008.050_Spill_Contingency_Plan.dwg	DATE: June 2011 / APPROVED: MP/ML	FIGURE: 4

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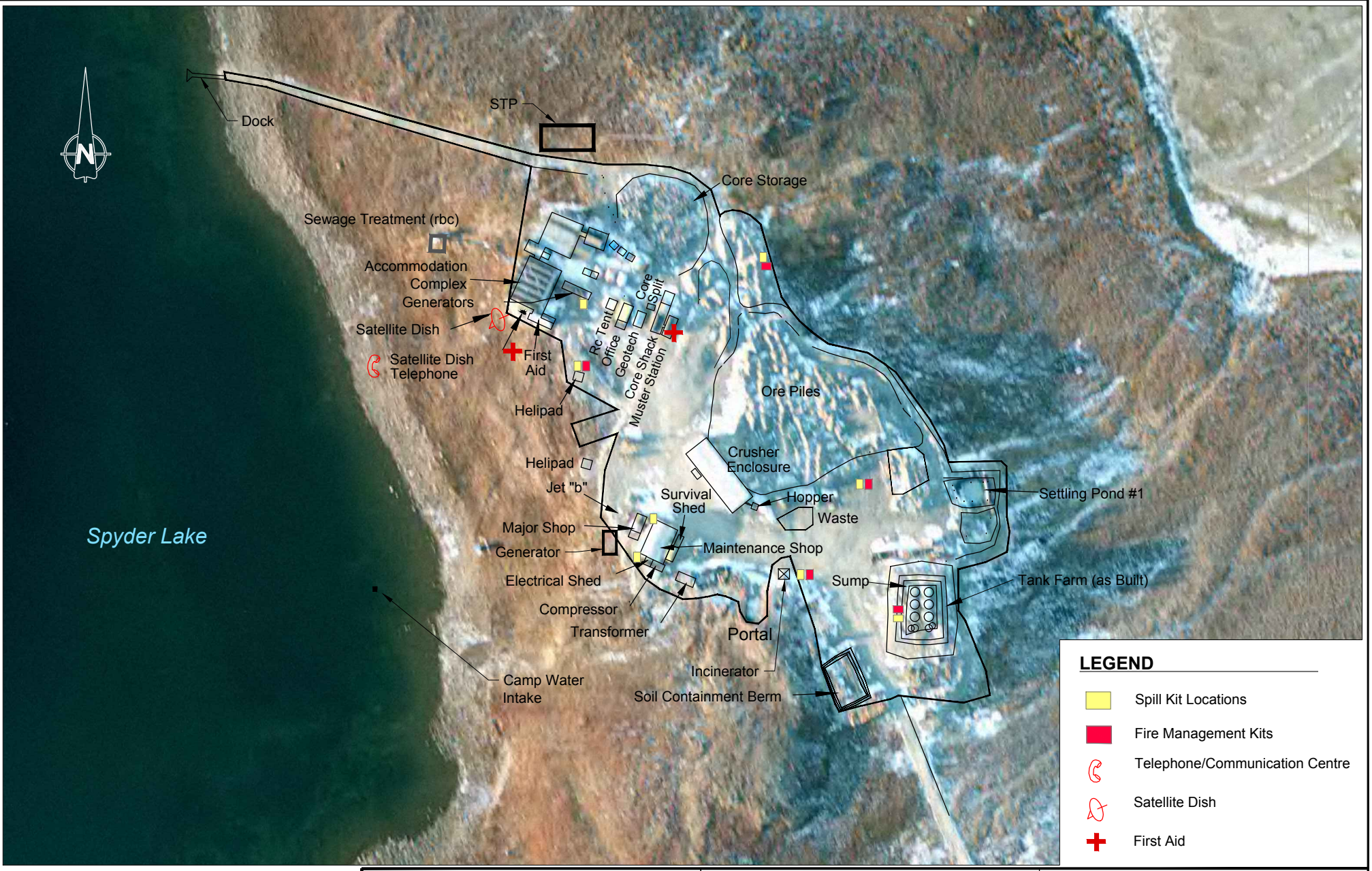

0 20 40 60 80 100
Scale in Metres

srk consulting

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HOPE BAY MINING LTD

HOPE BAY PROJECT

Spill Contingency Plan

Boston Camp
Site Layout

DATE:	APPROVED:	FIGURE:
June 2011	MP/ML	5

1.3 Hope Bay Project Operator

The Hope Bay Project is owned and operated by:

Project Operator: Hope Bay Mining Ltd.
Suite 300 899 Harbourside Drive
North Vancouver, BC V7P 3S1

Parent Company: Newmont Mining Corporation
6363 South Fiddler's Green Circle
Greenwood Village, CO
80111, USA

Hope Bay Project Contacts:

Corporate:

Mr. Chris Hanks
VP Environmental Affairs
Hope Bay Mining Ltd.
Tel. 720-917-4489

Mr. Brad Skeeles
General Manager of Operations
Hope Bay Mining Ltd.
Tel. 604-759-2284 / Fax 604-980-0731

Hope Bay Site:

Ms. Angela Holzapfel
Manager of Environmental Compliance, Environment and Social Responsibility
Hope Bay Mining Ltd.
Tel. 604-345-3122

Mr. Fred Penner
Facilities Manager
Hope Bay Mining Ltd.
Tel. 604-759-4708 / Fax 604-980-0731

Mr. Glenn Winsor
Facilities Manager
Hope Bay Mining Ltd.
Tel. 604-759-4708 / Fax 604-980-0731

Mr. Wayne Osborne
Mine Operations Manager
Hope Bay Mining Ltd.
Tel: 604-523-4128

1.4 Spill Response Resource Inventory

This following section provides a description of the resources available on the Hope Bay Project site for responding to spills.

1.4.1 On - Site Resources

Spill Response Kits (Spill Kits) are in place at the following locations in the Hope Bay Project area:

- Roberts Bay marine spill response sea-cans;
- Roberts Bay command centre;
- Roberts Bay 5M litre tank;
- Roberts Bay fuel transfer facility;
- Roberts Bay fuel farm;
- Roberts Bay incinerator;
- Nuna maintenance shop;
- Doris airstrip north apron;
- Doris airstrip south apron;
- Doris power generating facility;
- Doris 735 generator;
- Doris freshwater intake;
- Doris helicopter pads;
- Doris sewage treatment;
- Doris fuel farm;
- Doris ice airstrip (when in use);
- Orbit Shop;
- GeoTech Shop;
- Cementation Shop;
- Swick Shop;
- WestArc Shop;
- BBE Warehouse;
- Tail Lake frozen core plant;
- Crusher;
- Doris portal;
- Fuel transfer vehicles;
- Boston incinerator;
- Boston maintenance shop;
- Boston winter airstrip (when in use);
- Boston power generating facility;
- Boston freshwater intake;
- Boston float plane landing dock area;
- Boston fuel farm;
- Boston helicopter pad;
- Windy oil-water separator; and
- All refuelling stations (regardless of location).

Each of these spill kits is clearly labelled and contains, but may not necessarily be limited to:

- 1 roll absorbent (optional);
- 2 plug and dyke kits;
- 1 – 3 m x 4 m tarpaulin;
- 2 pairs of disposable coveralls;
- 4 mini booms (optional);
- 100 spill pads;
- 1 bag of corncob absorbant;
- 1 bag of multizorb fire retardant granular for aviation stations (helipad and airstrip);
- 2 pair of neoprene gloves [i.e. POL (petroleum/oil/lubricants) resistant];
- 2 sets of splash proof POL resistant goggles;
- 1 collapsible shovel;
- 10 disposable waste bags and ties (contact waste management for drums to contain clean-up materials); and
- A copy of the Spill Kit First Responder Insert (see Appendix A).

The Hope Bay Project also maintains separate, marine focused spill response equipment within 7 moveable containers (Seacans) which are designed to be located in close proximity to the jetty during the unloading of the fuel barge or tanker (and on the perimeter of the bulk fuel storage tanks containment at all other times). The marine spill kit is composed of, but may not necessarily be limited to, the following:

- 450 feet of 24" solid floatation boom;
- 70 lb, 43 lb, 25 lb, and 17 lb Danforth anchors;
- 8 lb Grapnel Anchors;
- 36” sea anchors;
- Anchor pins;
- Anchor Buoys;
- Anchor lines;
- 150 feet Towline;
- Boom towing bridles;
- 1250 feet of skirted booms (preassembled with tow lines, bridles and floats);
- 200 feet of inflatable ShoreSaver booms (with inflation kit);
- 1TDS-118 Drum Skimmer;
- 1 P10E Power Pack;
- 2 Pump;
- 175 L Drum Response Kits c/w lids;
- Disposable coveralls (i.e.Tyvek suits);
- POL (petroleum/oil/lubricants) resistant gloves;
- POL resistant goggles;
- Toolbox c/w assorted tools;
- 45 Gallon containers c/w lids;
- Pails and Rubbermaid tubs;
- 300 foot Nylon rope (3/8);
- Bags of Oclansorb Peat Moss or crushed corn cobs;

- Bundles of oil sorbent pads;
- Bundles of universal sorbent pads;
- Oil Sorbent booms;
- Universal sorbent booms;
- Bag of Sorbent scraps (spaghetti);
- Containment tanks and berms;
- Plug and dyke kit;
- Garbage bags;
- Ice scrapers;
- A 20 foot Response boat, c/w 80 HP outboard motor (with boat safety kit);
- An 18 foot landing craft boat (with boat safety kit); and
- An 8 foot Zodiac (with boat safety kit and repair kit).

All fuel transfer vehicles on site are also equipped with a “trucker” spill kit designed to absorb up to approximately 10 gallons of oil, coolants, solvents or water as well as other hazardous fluids.

Each exploration drilling rig will maintain a spill kit containing, but not necessarily limited to, a minimum of:

- 1 roll absorbent (optional);
- 2 plug and dyke kits;
- 1 3m x 4m tarpaulin;
- 4 mini booms (optional);
- 100 spill pads;
- 2 pair of neoprene gloves (i.e. POL (petroleum/oil/lubricants) resistant);
- 2 sets of splash proof POL resistant goggles;
- 10 disposable waste bags and ties; and
- A copy of the Spill Kit First Responder Insert (see Appendix A).

In addition, the Hope Bay Project site maintains a significant on-site inventory of roll, pad and mat absorbents, plug and dyke kits, mini booms, absorbent socks, peat moss, crushed corn cobs, coconut mats, hand tools, and various heavy equipment (including two trucks equipped with vacuum pumps and tanks) all of which can be easily mobilized to respond to any unanticipated discharge or spill.

The Hope Bay Project is a member of the Mackenzie Delta Spill Response Corporation, which focuses on the protection of the Arctic Marine environment. As a member additional equipment would be available in the event of a significant marine spill including but not limited to a boat, trailer, motor, booms, generators, hoses, first aid equipment, a variety of tools, and personal protective equipment. For a complete list of available equipment see Schedule II of the Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (OPPP).

1.4.2 Spill Kit Inspections

All Spill Kits will be inspected at least twice per calendar year or after use to ensure that each kit is appropriately located, sound and contains the requisite material in a usable condition. The responsibility for conducting such inspections will be vested in the Environmental Superintendent and the Emergency Response Team Leader on site, and efforts will be coordinated between the two.

The results of each inspection will be provided to the VP Environmental Affairs and the Manager of Environmental Compliance.

1.4.3 Off-Site Resources

The Hope Bay Project is a remote location that is only accessible by plane for the majority of the year, with a short open-water ship access season. As the most effective mitigation of a spill condition is rapid and effective mobilization, the Hope Bay Project Spill Contingency Plan does not rely on off-site resources to successfully respond to anticipated upset conditions. The Plan has been developed and the resources required to respond to spills have been positioned on site, therefore it is anticipated that the Hope Bay Project and its on-site contractors have sufficient resources and personnel to respond to all types/sizes of spills that could potentially occur on site.

Notwithstanding this, off-site resources are available in the unlikely event that they are required. During the transport and transfer of material from the barge or tanker to site, the shipping contractor, will provide additional spill response capability as well as additional spill response materials and experience. As a member of the Mackenzie Delta Spill Response Corporation, additional resources are available. Details of these resources are located in the OPPP which is found under a separate cover.

2 Applicable Legislation, Licensing and Guidelines

Part I of Water Licence 2AM-DOH0713 and Part H of Water Licences 2BE-HOP0712 and 2BB-BOS0712 issued to HBML by the Nunavut Water Board (NWB) specify that the operator shall prepare and provide a Spill Contingency Plan in “accordance with the Spill Contingency Planning and Reporting Regulations developed under Section 34 the Environmental Protection Act (Nunavut). In Water Licence 2BE-HOP0712, “Spill Contingency Plan” is defined as “a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during operations conducted under the license’. A single Hope Bay Project Spill Contingency Plan has been developed to address the requirements of Water Licences 2AM-DOH0713, 2BE-HOP0712 and 2BB-BOS0712 in order to provide a consistent spill response framework for the Hope Bay Project that is available to all site personnel so they can effectively and efficiently respond to a spill of petroleum products and/or hazardous materials regardless of where on the Hope Bay Project site they are encountered.

In addition, the Plan was prepared to meet the specifications provided in the Guidelines for Spill Contingency Planning, prepared by Water Resource Division, Indian and Northern Affairs Canada (April 2007).

3 Project Description

3.1 Project Setting

The Hope Bay Project and all components of the supporting infrastructure, with the exception of the jetty, have been constructed and are being operated on Inuit owned land. The jetty, which extends into Roberts Bay, is located on the foreshore Crown Land.

The Hope Bay Project is a remote site in an Arctic setting. Pre-development land use can be classified as wildlife habitat with occasional use by Inuit people for subsistence hunting and fishing. HBML's closure objectives are to return the land after reclamation has been completed to healthy, self-sustaining wildlife habitat suitable for use by Inuit people for subsistence hunting and fishing.

Climate

The Hope Bay Belt has a low arctic eco-climate with a mean annual temperature of -12.1°C with winter (October to May) and summer (June to September) mean daily temperature ranges of -50°C to +11°C and -14°C to +30°C, respectively. The mean annual precipitation ranges from 94 mm to 207.3 mm. Annual lake evaporation (typically occurring between June and September) is estimated to be 220 mm. The average monthly air temperature is typically above 0°C between June and September with the peak in July, and below freezing between October and May with the coldest temperatures usually occurring in February. The mean annual precipitation adjusted for under-catch is approximately 207 mm with 41% occurring as rain between May and October and 59% as snow through the remainder of the year.

Surficial Geology and Permafrost Conditions

The Project area is coastal lowland with numerous fresh water lakes and ponds separated by glacial landforms and parallel running geological intrusions of diabase dykes and sills. The drainage basins are generally long and narrow and predominantly oriented along the north-south axis.

The local topography ranges from sea level at Roberts Bay to 158 m at the summit of Doris mesa, 3 km inland.

Bedrock ridges, oriented north-south parallel with the dominant strike of bedrock units, show the erosive effects of the northward flowing Pleistocene (Keewatin Lobe) continental glacier ice over 10,000 years ago. The surficial active layer over continuous permafrost is approximately 2 m thick. Drill core results indicate soils below the active layer contain interstitial and segregated ground ice. Most of the soils are of marine origin and include clay, silt and some sand. Surface materials include frost-churned mineral and organic soils mantled by a thin cover of tundra vegetation. Patterned ground masks the underlying soils. Small, frost-heaved clay-silt polygons are common. Linear frost cracks occur in raised marine spit deposits. Ice wedge polygons are common. The entire area lies below the post-glacial marine limit of 200 meters above sea level (masl). Pleistocene deposits, including till, are buried beneath Holocene marine sediments deposited during the post-glacial marine emergence. Some glacial deposits show evidence of alterations by marine wave action.

Continuous permafrost extends to -560 m. (Heginbottom et. al., 1995). Ground temperature measurements in the Project area indicate an active zone thickness ranging between 1.5 to 2.6 m and the depth of zero annual amplitude varying between 11 and 17 m (Golder 2001; EBA 1996). The geothermal gradient measured at the Boston Camp is approximately 18°C km-1, which also indicates a depth of continuous permafrost of approximately –560 m.

Groundwater movement will only occur in the shallow active layer (to a depth of between 1.5 to 2.6 m) during its seasonal thaw period. The permafrost underlying the area is generally impervious to groundwater movements.

Aquatic Ecosystems

The Project area drains to the north into the Arctic Ocean at Roberts Bay. Peak flows typically occur in June during snowmelt. A second smaller peak may occur from rainfall in late August or early September. The streams in the study area are usually frozen with negligible flow from November until May.

The lakes in the area are soft water lakes with near neutral pH and low to moderate acid sensitivity. Total phosphorous levels are low, indicating oligotrophic to mesotrophic conditions. Chloride, sodium, and potassium concentrations are elevated compared to typical lakes in the Slave Structural Province. Some metal levels (*i.e.*, total aluminum, iron, copper, cadmium, chromium, lead and manganese) in certain lakes exceed Canadian Water Quality Guidelines (CWQG) on a seasonal basis. Metal concentrations are generally representative of lakes in undisturbed northern regions. In summer, the lakes are generally well mixed. Wind likely plays an important role in maintaining well-mixed conditions. In shallow lakes, wind appears to cause complete lake turnover. Winter data generally indicates a shallow upper layer of water at or near 0°C, with constant temperatures, not exceeding 2 to 3°C, throughout the remaining water column. The lakes are typically well aerated during the summer; depressed dissolved oxygen (DO) concentrations are recorded near-bottom in winter.

Marine habitat characterization along the shoreline of Roberts Bay was mapped based on aerial observations. The southern shoreline around the mouth of Glenn and Little Roberts outflows is classified as good to excellent habitat for anadromous fish, such as Arctic char.

The Roberts Bay baseline data indicates a thermally stratified and well aerated water column in shallow water during summer, temperatures near 9°C and DO concentrations greater than 11 mg/L. Turbidity and total suspended solids (TSS) levels are low during summer (1.4 NTU and 11 mg/L, respectively). Most median total metal concentrations in Roberts Bay are below detection limits and below the CWQG; exceptions are cadmium and chromium which are occasionally above guidelines.

Vegetation

Vegetation in the Project area is characteristic of sub-arctic tundra vegetation. Three ecosystem units dominate the area: the ocean shoreline ecosystem, lowland ecosystems, and the rock outcrop and upland ecosystems. Several plant communities make up each of these ecosystems. Plant species identified include 19 shrubs, 92 herbs, 18 grasses, 32 sedges and rushes, 21 mosses and 8 species and/or genera of lichen. Inuit traditionally use many local plant species and understand the relationship between plants and caribou habitat requirements including the early showing of plants in snow free areas and the importance of such areas to caribou calving locations in the region. None of the local plants identified during the course of baseline studies are designated as endangered or threatened (COSEWIC, 2004).

Land & Water Use

The Hope Bay Project is situated almost entirely on Inuit owned land administered by the KIA with minerals development authority vested within Nunavut Tunngavik Inc. (NTI). Mineral rights are also

held by the Crown on select areas of the Hope Bay Belt, which include Boston, part of Windy Lake Camp, and the Madrid exploration area.

Protected Areas

There are no protected areas in, or adjacent to the Project area. The closest designated land use restriction is the Queen Maud Gulf Bird Sanctuary located approximately 40 km east of the Hope Bay Belt.

Archaeological/Special Sites

The West Kitikmeot has a diversity of archaeological and historic resources, and such resources comprise an important aspect of Inuit culture, spirituality and perspectives with respect to relationships with the land. HBML has completed comprehensive baseline surveys for historic and cultural resources in the Project area and has identified over 250 sites with some being in close proximity to Project features.

3.2 Project Activities

The Hope Bay Project is currently an advanced mineral exploration project primarily consisting of surface and underground development in the Doris North area along with exploration drilling at various locations within the Project area. The Project includes the Doris North Camp located at approximately N 68° 08.298' W 106° 36.612' which was constructed in 2008 and designed to house a maximum of 180 people, as well as the necessary infrastructure to support the camp and the exploration drilling and development activities currently underway. The major components of this infrastructure include:

- The Roberts Bay jetty to facilitate supply barge loading and unloading;
- The Roberts Bay Laydown area;
- The Roberts Bay (Quarry #1) bulk 5 ML fuel storage and refuelling station located within a purpose built secondary containment facility;
- The Roberts Bay (Main) bulk 20 ML fuel storage located within a lined secondary containment facility;
- Roberts Bay Waste Management Facility, including two Westland Model CY 100-CA-D-O incinerators;
- A gravel airstrip integrated with the road between Roberts Bay and Doris camp;
- The Doris Camp and generator, including the administration building and mine dry;
- Doris sewage treatment facility;
- Doris helicopter pads;
- Doris fresh water intake;
- Nuna Logistics Inc. maintenance facility/ shop and generators;
- Roberts Bay Overburden Stockpile area and sedimentation berm;
- Quarry 2 Crusher and aggregate storage area;
- Doris North upper and lower reagent storage area;
- Concrete Batch Plant;
- Doris North Camp Pads, including area designated for waste rock and ore storage;
- Doris North Access Road and upslope water diversion berm/measures;
- Doris North Portal;

- Doris North Fuel Storage and fuel transfer station, located within a lined secondary containment facility (includes an area for the Foam Suppression building);
- Doris North Overburden Stockpile area and downstream sedimentation berm;
- Doris North Sedimentation and Pollution Control Ponds;
- Tail Lake secondary all-weather road, including Doris Creek Bridge;
- Tail Lake North Dam;
- Frozen Core Plant (temporary) and Plant Pad;
- Tail Lake reclaim barge access road (for access to temporary barge/dock on Tail Lake);
- Roberts Bay and Doris communication towers;
- Explosives storage facilities;
- Explosives emulsion plant and washbay;
- Underground mine maintenance facility and warehouse;
- Doris warehouse; and
- Various contractor shops and laydowns.

In addition, the Hope Bay Project includes the Boston Camp located at approximate N 67° 39.454' W 106° 23.093'. The Boston Camp site is typically only used seasonally to support exploration activities. The camp can house a maximum of 65 people, as well as the necessary infrastructure to support the camp and the exploration drilling activities in the area. The major components of this infrastructure include:

- The Boston Camp and generator;
- Sewage treatment facility;
- Bulk fuel storage and fuelling station, located within a lined secondary containment facility;
- Fresh water intake;
- Landfarm;
- A number of functional support buildings at the site; and
- Airstrip.

The Hope Bay Project also includes a second remote exploration camp, the Windy Camp, located at approximate N 68° 03.715' W 106° 37.109'. This camp is currently not inhabited and is under "care and maintenance" with regular inspections conducted by Hope Bay Project personnel. The current camp is destined for decommissioning and reclamation over the next several years. Chemicals and bulk hydrocarbons are not stored at Windy Camp. Small amounts of fuel are transported to the site when equipment (i.e., water pumps and oil-water separators) are in use for maintenance activities; therefore, this Hope Bay Spill Contingency Plan is considered applicable and appropriate for application at Windy Camp.

3.3 On-site Hazardous Materials

The most prevalent hazardous materials currently on the Hope Bay Project site are currently petroleum derived materials. The petroleum derived materials included in this Plan can generally be divided into two categories:

1. Flammable immiscible liquids.
2. Flammable compressed gases.

3.3.1 Flammable Immiscible Liquids

Flammable immiscible liquids are all hydrocarbon-based and will ignite under certain conditions. Gasoline and aviation fuel pose the greatest fire (and safety) hazard.

All hydrocarbon-based materials are insoluble and float unless mixed into the water column and can be recovered when safety allows. They are:

- Gasoline with a low flash point (burns easily);
- Jet B and A;
- P50 Diesel Fuel;
- Lube Oil with a high flash point; and
- Waste Oil.

3.3.2 Flammable Compressed Gasses

Propane, acetylene and oxygen are the flammable gases common to the Hope Bay Project site. These gases:

- Are usually highly explosive;
- May be heavier than air and, therefore, concentrate in low lying locations; and
- May be lighter than air and may be highly noxious or toxic.

3.3.3 Other Products

Because of the nature of the Hope Bay Project, there are relatively small amounts (compared to the volume of hydrocarbons on site) of chemicals and other reagents that are employed in the drilling process and other site activities. These include:

- Sodium chloride and calcium chloride;
- Explosives (ammonium nitrate fertilizer, emulsions and high explosive (stick Powder));
- ANFO (mixture of fuel oil mixture and ammonium nitrate) used for blasting at the quarries;
- Sewage treatment plant chemicals (Sodium Hypochlorite Solution/NaCIO, Oxalic Acid $(COOH)_2$ and Citric Acid $(HOOCCH_2C(OH)(COOH)CH_2COOH)$ in small volumes;
- Domestic sewage;
- Glycols;
- Compressed gases (welding gases);
- Methyl hydrate (small volumes);
- Lead acid batteries;
- Marisol Boiler Treatment; and
- Petroleum contaminated soil.

Product specific Material Data Safety Sheets (MSDS) and associated spill response procedures are available on site and for regulatory review.

3.4 Inventory of Fuel Storage Facilities

Table 1 provides a summary of all petroleum storage tanks currently “active” on the Hope Bay Project sites at Roberts Bay, the Crusher facility, Tail Lake frozen core dam pad, Doris Camp and the Boston Camp. All of the tanks are above ground and the majority contain diesel fuel. Empty tanks are stored on the upper and lower reagent pads.

Table 1: Hope Bay Project Permanent Petroleum Storage Facilities

Location	Co-ordinates	Type of Facility	Tank Capacity (L)
Roberts Bay	N68º 10.594' W 106º 36.997'	Storage/Dispensing	5,000,000
Roberts Bay	N68º 10.580' W 106º 36.958'	Storage	75,000
Roberts Bay Tank Farm	N68º 10.429' W 106º 37.089'	Storage	20,000,000 4 tanks at 5,000,000
Q2 – Crusher	N68º 08.340' W 106º 37.473'	Storage	22,500
Doris	UTM 13W 0433369 7558945	Storage/Fuelling	75,000
Doris Camp	UTM 13W 0432511 7560244	Storage/Fuelling	70,000
Doris Generator	N68º 08.247' W 106º 36.824'	Storage	3,720
Doris Generator	UTM 13W 0432955 7559090	Storage	15,000
Doris	UTM 13W 0433327 7558930	Storage	4,500
Doris Camp	N 68º 08.322' W 106º 36.722’	Storage	7,500,000 5 tanks at 1,500,000
Doris Camp	UTM 13W 0432511 7560244	Storage/Fuelling	2,400
Frozen Core Plant – West	UTM 13W 0434515 7559228	Storage	5,000
Frozen Core Plant – East	UTM 13W 0434534 7559234	Storage	5,000
Reagent Pad	UTM 13W 0432511 7560244	Storage	61,000
Boston #1	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	50,000
Boston #2	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	50,000
Boston #3	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #4	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #5	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #6	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #7	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #8	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	80,000
Boston #9	N 67º 39.444' W 106º 23.008'	Storage/Fuelling	50,000
Boston #10	N 67° 39.444’ W 106° 23.008’	Storage/Fuelling	50,000
Boston	N 67° 39.444’ W 106° 23.008’	Storage/Fuelling	1,240

The Hope Bay Project sites also store approximately 5,000 205-litre steel barrels of Jet fuel (including emptied barrels) for helicopter use, and oil and waste oil for site operations. The unopened barrels are stored at Roberts Bay in the fuel drum storage area, and drums/cubes containing waste product, or empty, are stored in the waste management facility containment berms.

3.5 Potential for Spills

Based on a review of the hazardous materials management at the Hope Bay Project using a failure mode and effects analysis framework, the most significant potential for spills on the site occurs during the three separate stages of petroleum fuel management activities. These are:

1. The transfer of fuel (primarily diesel) from the transport barge or tanker to bulk storage tanks at Roberts Bay.
2. The transfer of fuel (primarily diesel) from the Roberts Bay bulk storage tanks to transport trucks and from the trucks to on-site storage tanks or the Doris and Boston bulk storage tanks.
3. The refuelling of mobile equipment.

In order to reduce the potential for spills, all fuel storage tanks, piping and transfer vehicles are inspected on a regular basis. In addition, HBML has developed Fuel Handling and Spill Response Standard Operating Procedures (SOPs) for the Hope Bay Project site, which are reviewed with all fuel handlers on site (Figures 6 and 7). These SOPs provide procedures designed to minimize the potential for spills during fuel handling, as well as to clearly identify actions to be undertaken in the event that a spill of fuel does occur during any of the three scenarios identified.

A detailed SOP for the Bulk Diesel Fuel Offload station in Roberts Bay can be found in HBML's Oil Handling Facility OPPP/OPEP.

Bulk Fuel Transfer

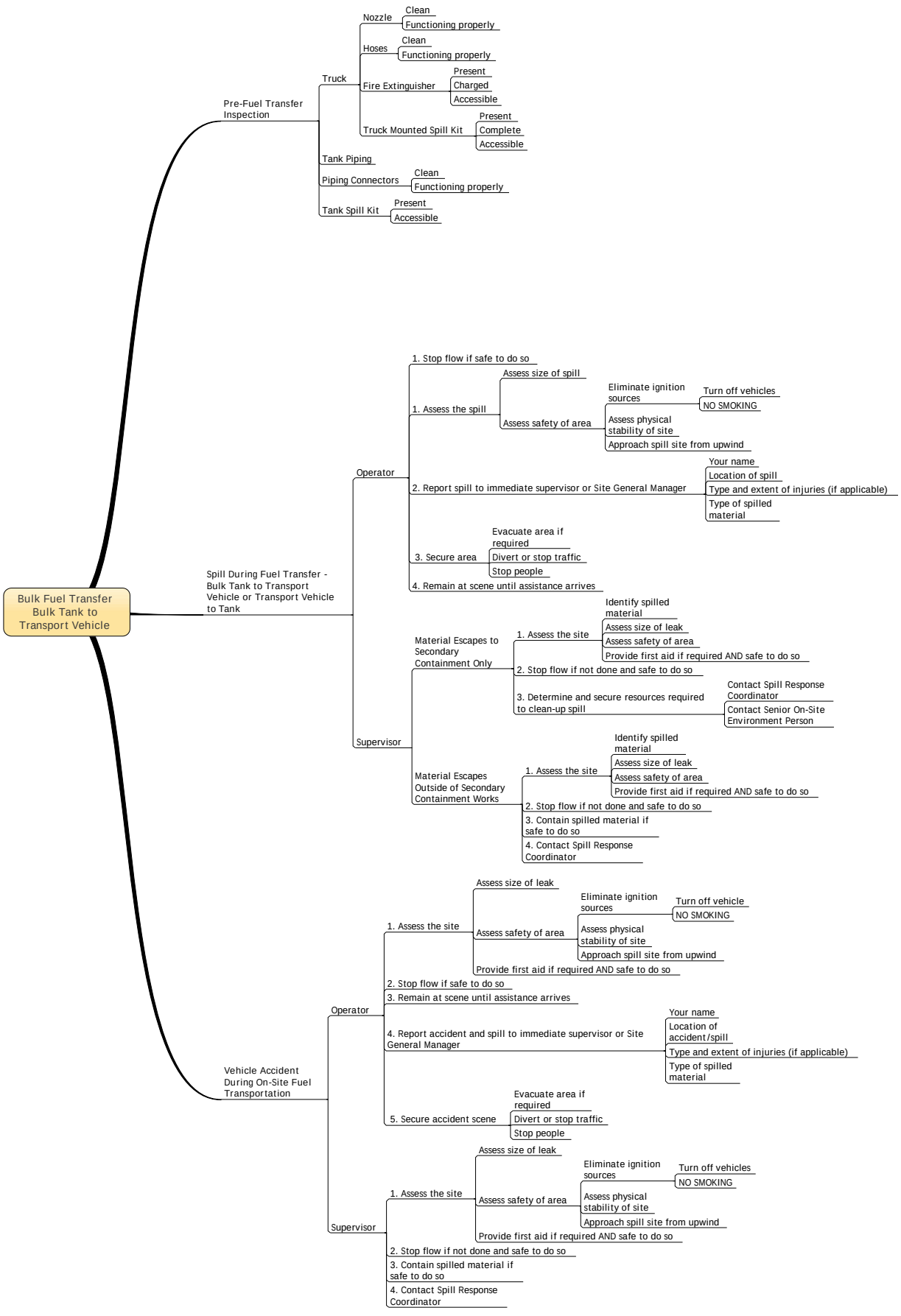

Figure 6: Bulk Fuel Transfer SOP

Refueling

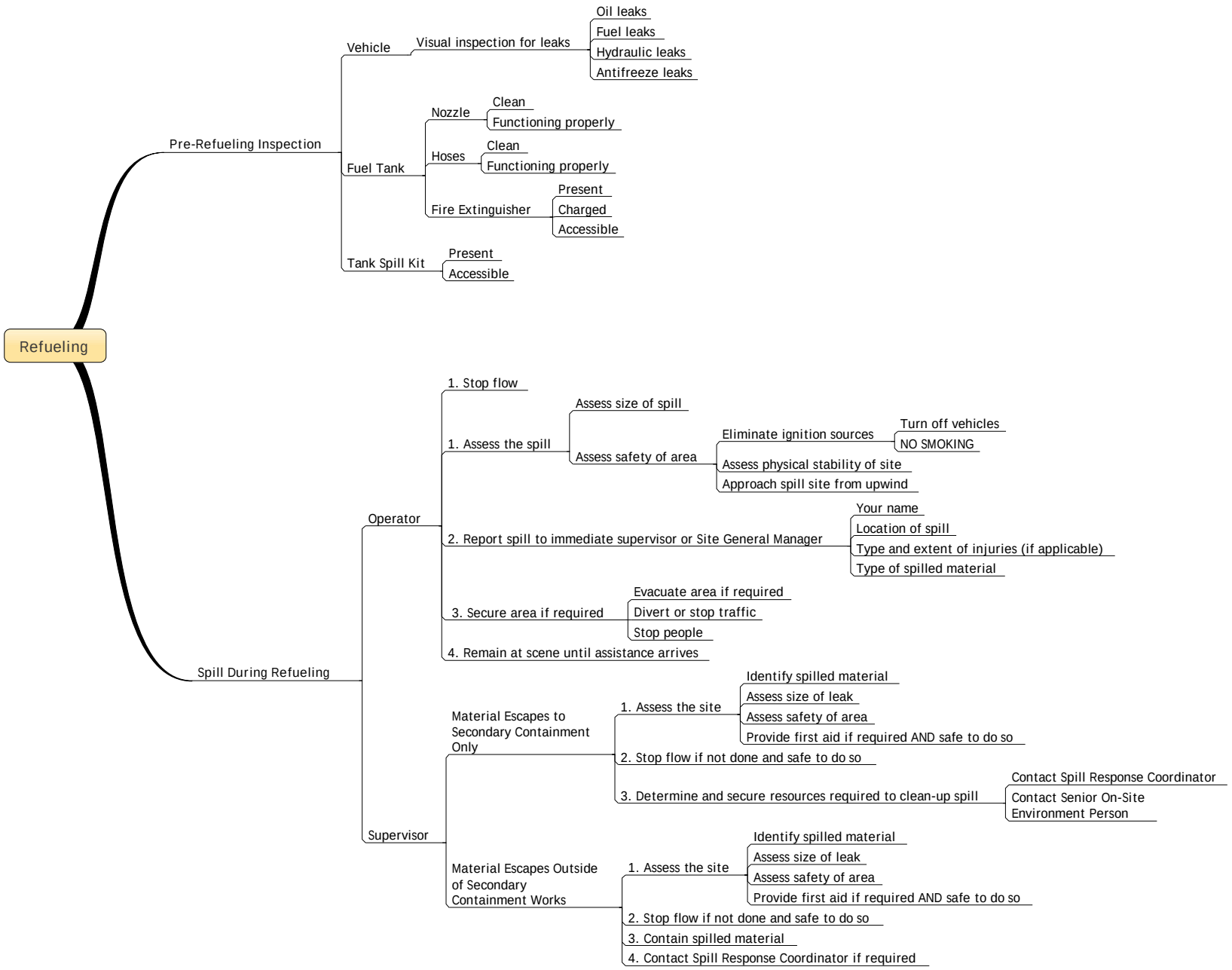

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Figure 7: Refueling SOP

4 Spill Response Organization

4.1 Summary

Refer to the Quick Reference Section (Spill Response Summary of Responsibilities) for a general overview of the spill response organization at the Hope Bay Project site.

4.2 Spill Response Organization

Prompt, effective and organized response to an unanticipated discharge or spill by the company will enhance the health and safety of all employees, serve to minimize, to the extent possible, the potential adverse environmental impacts resulting from such an event, and ensure effective communication with the appropriate regulatory agencies and the general public.

In order to provide such a response, the following provides a summary of the on-site spill response organization and reporting mechanism at the Hope Bay Project Site (Figure 8).

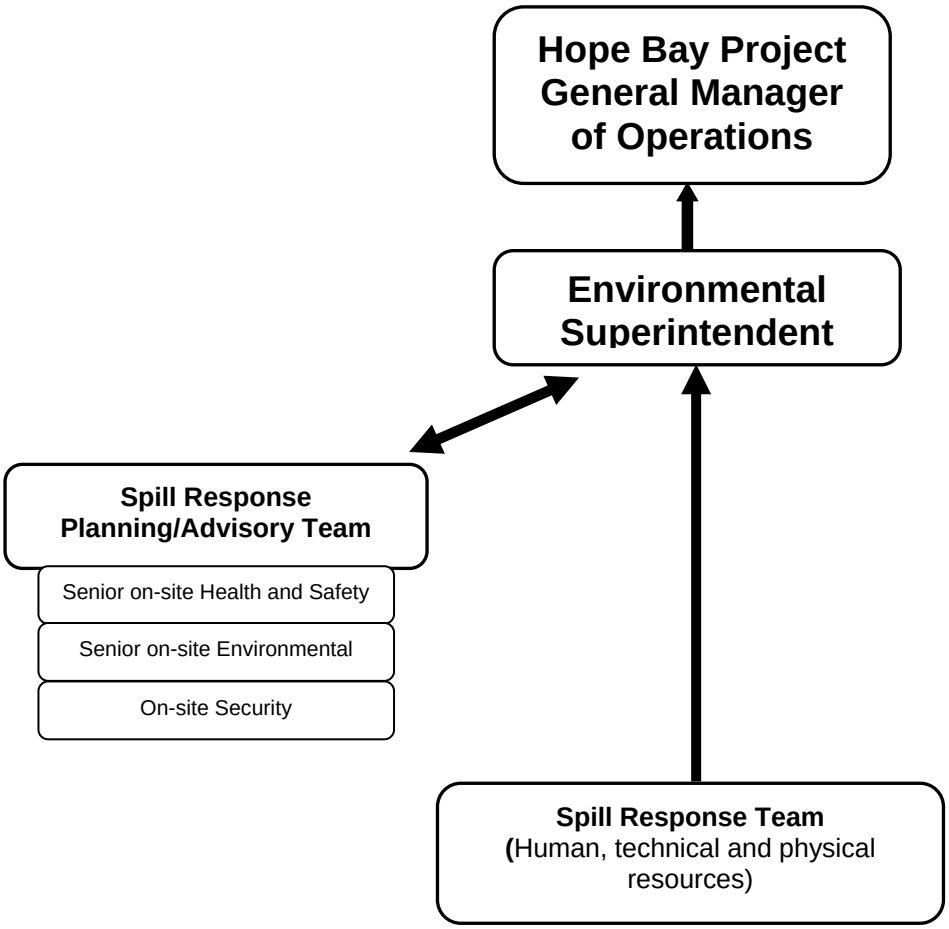


Figure 8: Spill Response Organization

Each identified individual or group has been assigned a specific set of responsibilities in the event that a spill response is required. The following provides a description of the required action of each.

4.2.1 First Responder

The First Responder is defined as any person on the Hope Bay Project site who comes across or sees an unanticipated discharge or spill. As a result, every person on the Project site is considered as a potential First Responder and receives appropriate training during their initial site orientation.

When someone on site sees an unanticipated discharge or spill, he or she is immediately designated as the First Responder and, as such, shall complete the following actions:

1. Assess the spill site by:
    a. Identifying the spilled material.
        i. Review MSDS for spilled material;
        ii. If it is not possible to identify material, the first responder will immediately report spill to supervisor (proceed with Action 4); and
        iii. If there is a potential risk of explosion or fire, the First responder will immediately report spill to supervisor (proceed with Action 4).
    b. Assessing (estimating) the size of leak.
    c. Assessing the safety of area by.
        i. Eliminating ignition sources by turning off vehicles, etc. and not smoking;
        ii. Assessing the physical stability of site, while always;
        iii. Approaching the spill site and material from upwind.
    d. Providing first aid to any injured parties if required AND it is safe to do so.
2. Stop the flow of material if it is safe to do so by:
    a. Putting on appropriate Personal Protective Equipment (PPE);
    b. Approaching the spill site from upwind;
    c. Tracing (or tracking) the source of the material; and
    d. Stopping the flow if it is safe to do so.
3. Contain the spilled material if it is safe to do so by:
    a. Constructing a temporary berm if possible;
    b. Constructing a temporary containment ditch if possible; and
    c. Placing absorbent materials from the spill kit in the flow path of the spilled material.
4. Report the spill to immediate supervisor or Facilities Manager (the facilities manager will contact the General Manager of Operations) by radio or phone, giving:
    a. Their name;
    b. The specific location of the spill;
    c. The type of spilled material; and
    d. The type and extent of injuries on scene (if applicable).

Note: Site contact numbers are included in a Spill Kit Insert found in each spill kit on site. (See Appendix A for an example).

5. Secure the immediate area of the spill by:
    a. Evacuating the area if required;
    b. Diverting or stopping traffic in the vicinity; and
    c. Keeping people away from the area.
6. Remain at/on scene until assistance arrives.

Refer to the Quick Reference Section (First Responder) for a summary of the spill response actions of the First Responder.

4.2.2 Supervisors (All)

In the event that a Supervisor is informed of a spill by any employee, he/she will immediately inform the General Manager of Operations (or designate), or the Facilities Manager if uncertain whom the designate is, using the phone numbers or radio channel provided (See Quick Reference section of this Plan) and proceed to the site of the spill.

Upon being informed of an unanticipated discharge or spill, the General Manager of Operations (or designate) will immediately designate the Environmental Coordinator as the Person-in-Charge and dispatch that person to the spill site. As the Person-in-Charge, they will be responsible for implementing the Spill Contingency Plan.

4.2.3 Environmental Coordinator (Spill Response Coordinator)

Once notified by the General Manager of Operations (or designate), the Environmental Coordinator (Spill Response Coordinator) will immediately equip him/herself with the appropriate Personal Protective Equipment (PPE) and proceed to the site of the spill. Once at the site, he/she will:

1. Assess the site by:
    a. Confirming the identity of the spilled material;
    b. Assessing (estimating) the size of leak;
    c. Assessing the safety of area by;
        i. Eliminating ignition sources by turning off vehicles, etc. and not smoking.
        ii. Assessing the physical stability of site, while always.
        iii. Approaching the spill site and material from upwind.
    d. Providing first aid to any injured parties if required AND it is safe to do so.
2. Stop the flow if not done and safe to do so.
3. Contain spilled material if safe to do so by:
    a. Constructing a temporary berm if possible;
    b. Construct a temporary ditch if possible; and
    c. Placing absorbent materials from the spill kit in the flow path of the spilled material.
4. Assemble the Spill Response Planning/Advisory Team composed of him/herself, the most senior on-site person from Health and Safety, the most senior on-site person from site Security; and,

based on advice from those people, assemble the technical resources deemed necessary to respond to the spill (e.g. equipment, personnel, etc.).

5. Establish a functional communications link with the General Manager of Operations (or designate) and the members of the Spill Planning/Advisory Team using on-site radios, satellite and/or traditional phones.
6. Determine and secure human, technical and physical resources (including equipment) required to complete an effective and efficient clean-up of the spill.

   If, in the opinion of the Environmental Coordinator, the size and/or type of spilled material requires the mobilization of off-site resources in order to effectively manage the spill and its clean-up, he/she will immediately notify of the General Manager of Operations (or designate). It is the responsibility of the General Manager of Operations (or designate) to communicate with, and secure, any off-site resources that may be required to address the spill.
7. Supervise all of the clean-up operations, including, but not necessarily limited to:
   a. The removal, storage and eventual disposal of all spilled material in an appropriate manner;
   b. The removal and appropriate disposal of any material contaminated by the spill; and
   c. The dismantling of any temporary containment works if applicable.
8. Remain on site until relieved or clean-up is complete.
9. Maintain a log (both written and photographic) of all activities undertaken in response to the spill.

The Environmental Coordinator will also be responsible for a number of activities after the spill has been stopped and the affected area cleaned-up. These include:

1. Ensuring the timely replacement of all spent spill response materials and equipment including, but not necessarily limited to, those associated with the primary and secondary containment equipment, the contents of any Spill Kit used to respond to the spill as well as any equipment mobilized to the spill site.
2. Assessing the impacts of the spill and its clean-up and determining, in consultation with senior environmental personnel, whether any on-going monitoring is required. In the event that such monitoring is required, the Spill Response Planning/Advisory Team will be responsible to ensure the conduct of such monitoring is done in a safe manner and by qualified and capable people.

Refer to the Quick Reference Section (Environmental Coordinator) for a summary of the spill response actions of the Environmental Coordinator.

4.2.4 Environmental Superintendent

In addition to assisting the Environmental Coordinator and General Manager of Operations (or designate) with organizing the spill response team, the Environmental Superintendent will be responsible for providing updates to the Manager of Environmental Compliance throughout the event and will be responsible for a number of activities after the spill has been stopped and the affected area is cleaned-up.

1. Conduct an investigation to identify the reason for spill (natural, technical or human causes).
2. Based on the results of that investigation, initiate corrective actions as required at both the spill site and other similar situations on site in order to reduce the potential of a repeat occurrence.

In the event that the spill is deemed "reportable" under the applicable legislation/regulations the Environmental Superintendent, in consultation with the Environmental Coordinator and the Spill

Response Planning/Advisory Team, will be responsible for preparing the draft Spill Reports for review and submission by the Manager of Environmental Compliance and VP Environmental Affairs. These include:

1. The NT-NU Spill Report Form (see Appendix C) to the NT-NU 24 Hour Spill report Line (see contact information in Quick reference section) which will be completed and submitted within 24 hours of the event (if required).
2. Assessing the impacts of the spill and its clean-up and determining, in consultation with senior environmental personnel, whether any on-going monitoring is required. In the event that such monitoring is required, the Spill Response Planning/Advisory Team will be responsible to ensure the conduct of such monitoring is done in a safe manner and by qualified and capable people.
3. Prepare and enter the HBML Accident/Incident Report into the Cintellate Database.
4. The detailed written spill report which will be completed and submitted to the appropriate regulatory agencies within 30 days of the event.

Refer to the Quick Reference Section (Environmental Superintendent) for a summary of the spill response actions of the Environmental Superintendent.

4.2.5 Spill Response Planning/Advisory Team

The Spill Response Planning/Advisory Team is composed of the Environmental Coordinator, the most senior on-site person from Health and Safety, the most senior on-site person from site Security. It is the responsibility of the Team to provide advice and support to the Environmental Coordinator to ensure that:

- Human life is protected and the potential for injury is minimized to the extent possible during all spill response activities;
- All adverse environmental impacts are kept to a minimum during all spill response activates;
- Resources are used effectively;
- All materials resulting from the spill and spill clean-up are managed, stored and disposed of in an appropriate and approved manner; and
- All required regulatory reporting is completed on time and in the prescribed manner.

4.2.6 Manager of Environmental Compliance

During a spill response event, the Manager of Environmental Compliance will maintain regular communication with the Environmental Coordinator and Superintendent, as well as the General Manager of Operations (or designate) to effectively monitor the spill response and provide updates to the VP Environmental Affairs. In addition, the Manager of Environmental Compliance will:

1. In the event that the event is a “reportable spill”, reviews the draft NT-NU Spill Report Form prepared by the Environmental Superintendent and submit the completed NT-NU Spill Report Form as soon as possible after the event and within 24 hours of the event (see Quick reference section for contact numbers).
2. In consultation with the HBML VP Environmental Affairs inform all agencies including, the Kitikmeot Inuit Association, the Nunavut Water Board, Environment Canada, Aboriginal Affairs & Northern Development Canada Field Operations Manager, and Fisheries & Oceans Canada, if appropriate (see Quick reference Section for contact information).
3. In consultation with the HBML VP Environmental Affairs and appropriate regulatory agencies, advise the public in the immediate vicinity of the spill if warranted.
4. Review and submit the HBML Accident/Incident Report prepared by the Environmental Superintendent.

5. In consultation with the HBML VP Environmental Affairs, submit the completed detailed written spill report to the appropriate agencies within 30 days of the event.

4.2.7 General Manager of Operations (or designate)

During a spill response event, the General Manager of Operations (or designate) will maintain regular communication with the Environmental Superintendent in order to effectively monitor the spill response and clean-up activities. In addition, the General Manager of Operations (or designate) will:

1. Initiate HBML Rapid Response System as appropriate (Appendix D).
2. Maintain a written log of all communications both internal to the site as well as all external communications with regulatory agencies, land agencies and the public.
3. Provide regular updates to HBML senior management off-site.
4. Conduct a post-clean-up inspection of the spill site that will include, but not necessarily be limited to, the management of the recovered product, the appropriate disposal of materials used in the clean-up, remediation activities, and corrective actions taken.
5. Review the HBML Accident/Incident Report prepared by the Environmental Superintendent.

Refer to the Quick Reference Section (General Manager of Operations) for a summary of the spill response actions of the General Manager of Operations.

4.2.8 On-Shore Supervisor/Incident Commander

The On-Shore Supervisor position only pertains to the receipt of annual bulk fuel off loads during the summer months at the HBML port site fuel storage facility in Roberts Bay. When the On-Shore Supervisor is notified that a spill has occurred during the bulk fuel off load they effectively become the Incident Commander for the response organization and will:

1. Ensure the transfer process of fuel is stopped immediately.
2. Alert other relevant departments.
3. Depending on the size and extent of the spill activate the Emergency Response Team.

The relevant departments and Emergency Response Team will follow tasks and steps outlined in section 4 of this document and section 3.5 of HBML's Oil Pollution Prevention Plan/Oil Pollution Emergency Plan.

For a complete list of roles and responsibilities pertaining to the bulk fuel off load process refer to HBML's Oil Pollution Prevention Plan/Oil Pollution Emergency Plan.

4.3 Spill Response Communications

During a spill response event, staff on site will report through the Environmental Coordinator to the General Manager of Operations (or designate). The General Manager of Operations (or designate) will maintain regular contact with the VP Environmental Affairs and the corporate office.

During such an event, no on-site staff will communicate directly with regulatory agencies, the press or other parties off of the mine site. All external communication is to be through the General Manager of Operations (or designate), the Manager of Environmental Compliance or the VP Environmental Affairs. This is to prevent inaccurate information being spread that could lead to inappropriate response, cause undue stress to family members awaiting word, or cause undue panic to members of the general public.

4.3.1 On-Site Communications

Specific on-site personnel are equipped with portable radios. All front line supervisors are required to carry a functional portable radio at all times while working on site. Independent satellite phones are also available for crews working off site and for emergency communications in the unlikely event that the radio and phone systems fail.

5 Spill Response Actions

The Hope Bay Project is a remote location that is only rapidly accessible by plane. As a result, the *Hope Bay Project Spill Contingency Plan* does not rely on off-site resources to successfully respond to unanticipated spills. It is anticipated that the Hope Bay Project and its on-site contractors have sufficient resources and personnel to respond to all types/sizes of spills that could potentially occur on site.

The following issues are a consideration in spill contingency planning given the remote Arctic location of the Project:

Environmental Factors

- High density of habitat use during summer seasons;
- Extreme seasonal ecological sensitivity variations;
- Unique shore types , (tundra coasts);
- Unique oceanographic and shoreline seasonal changes (open water, freeze-up, breakup, frozen conditions); and
- Slow weathering and longer persistence of spilled product.

Operational Considerations

- Remote logistical support;
- Need to improvise response using available means until support equipment arrives;
- Safety in cold, remote areas;
- Cold temperature effects on the efficiency of equipment and personnel;
- Boat operations in ice-infested waters during transition periods, winter dynamic ice conditions;
- On-ice operations in winter;
- Seasonal daylight variation;
- Minimization of damage to permafrost during land-based staging and clean-up operations; and
- Need of aircraft for logistics, surveillance, and tracking.

5.1 Fuel Spills on Land

Containment and Clean-up

In the event of a liquid spill on gravel, rock, soil or vegetation, it is very important to prevent the liquid from entering any body of water where it will spread and likely have a greater environmental impact. Liquid spills on gravel, rock, soil or vegetation will be contained and cleaned up by:

- Constructing a temporary soil berm in front of the leading edge of the spill and down slope of the spilled liquid. Plastic tarps can then be placed over and at the foot of the berm to permit the liquid to pool on the plastic and facilitate easy recovery.
- For small volumes of spilled material, absorbent pads etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.
- Larger volumes of spilled material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks), if available. Care must be taken when transferring the spilled material in order to prevent a secondary spill during this pumping and transfer.

- In extreme circumstances, such as the recovery of large volumes of spilled material, consideration may also be given to employing the vacuum truck capabilities of both the Nuna service truck and sewage vacuum truck.

Removal of Contaminated Soil and/or Vegetation

In general, all contaminated material generated from a spill will be stored in steel drums for appropriate disposal which may include the off-site transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility operated under the Doris Type A Water Licence.

In the event that a particular spill requires the removal and appropriate disposal of large volumes of contaminated soil, rock or vegetation, the Environmental Coordinator will contact the other members of the Advisory Team to discuss the most appropriate recovery strategy and transportation or storage methods.

Restoration of Affected Areas

Determination of the required level of final clean-up, restoration (or mitigation) and on-going monitoring will be completed in consultation with, and to the satisfaction of, the AANDC (formerly INAC) Inspector and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.2 Fuel Spills on Fresh Water

Containment and Clean-up

In the event of a liquid spill on water, it is very important to limit, to the extent possible, the spread of the spilled material. The following steps will be taken for spills on water:

- Limit the area of the spill on water to the extent possible. For example, place a large wide board (e.g., plywood) vertically across the culvert inlet to control the water level while retaining the spilled fuel. The board can be secured by stakes and absorbent materials used to recover the fuel on the water surface.
- Small volume spills on water will be recovered by the use of absorbent pads, socks and similar materials.
- For larger areas, absorbent boom(s) will be deployed to contain the spilled material and to facilitate recovery. Absorbent booms will be drawn slowly in to encircle spilled fuel and absorb it. The boom materials are hydrophobic (absorb hydrocarbons and repel water). The effectiveness of this action can be limited by winds, waves and other factors.
- Sorbent booms, socks and/or pads can also be used to recover hydrocarbons that escape containment booms.
- Consideration may also be given to employing the vacuum truck capabilities of both the Nuna service truck and sewage vacuum truck in extreme circumstances such as the recovery of large volumes of spilled material.
- In certain circumstances it may be possible to deploy skimmers in open-water areas in the early fall or late spring.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.

All contaminated material generated from a spill response will be stored in steel drums for appropriate disposal which may include the off-site transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility.

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC (formerly INAC) Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.3 Fuel Spills on Snow

Fuel spills on snow will be contained and recovered by:

- Limiting the area of the spill to the extent possible by compacting the snow into snow-berms and then placing a liner of plastic sheeting at the toe and over the berm in order to collect the spilled material and facilitate recovery.
- Using the snow as a natural absorbent to collect spilled fuel.
- For small volumes of spilled material, absorbent pads etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used. The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.
- Snow, saturated with the spilled material, may also be scraped up and stored in a lined containment area or placed in steel drums for appropriate disposal or incineration.
- Larger volumes of material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks), if available. Care must be taken when transferring the spilled material in order to prevent a secondary spill during pumping and transfer.
- Consideration may also be given to employing the vacuum truck capabilities of both the Nuna service truck and sewage vacuum truck in extreme circumstances, such as the recovery of large volumes of spilled material.

All contaminated material generated from a spill response will be stored in steel drums for appropriate disposal which may include the offsite transport of the material for disposal at an appropriate approved facility, or deposition in the land farm facility.

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC (formerly INAC) Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean-up criteria.

5.4 Fuel Spills on Ice

Fuel spills on ice will be contained and cleaned up by:

- Limiting the area of the spill to the extent possible by compacting the snow around the edge of the spill to act as a berm. Time permitting; the berm can be lined with plastic sheeting. The underlying ice will prevent or reduce the rate of seepage of the fuel into the water below the ice.
- Scraping up contaminated snow/ice and placing it in covered drums or in a lined secondary containment area on land.
- In certain circumstances it may be possible to deploy skimmers in open-water areas in the early fall or late spring. Deploying skimmers in broken-ice conditions may be effective as spills tend to spread far less than in ice-free water however, under normal ice-covered periods, skimmers are unlikely to be effective.
- Using snow as an absorbent to collect spilled fuel.
- For small volumes of spilled material, absorbent pads, etc. can be used to recover the spilled material. When such pads are saturated with fuel they can be squeezed into empty drums and re-used. In addition the spilled material may be scraped up and stored in a lined containment area or placed in steel drums for appropriate disposal or incineration.
- The saturated absorbents used will be placed in empty drums for later disposal in an appropriate manner.

- Larger volumes of material may be pumped to empty steel drums or empty fuel storage tanks (i.e. Tidy Tanks) , if available. Care must be taken when transferring the spilled material in order to prevent a secondary spill during pumping and transfer.
- Consideration may also be given to employing the vacuum truck capabilities of both the Nuna service truck and sewage vacuum truck in extreme circumstances such as the recovery of large volumes of spilled material.

Burning off spilled hydrocarbons on-ice offers the potential to remove the majority of a spill with minimal residue volumes left for manual recovery. Burning of spilled hydrocarbons on-ice has been considered as a primary arctic spill countermeasure. However, prior to initiating such action, representative of the Hope Bay Project will secure permission from the appropriate agencies (i.e. the KIA and/or regulatory authorities).

Determination of the required level of final clean-up, restoration and on-going monitoring will be completed in consultation with, or to the satisfaction of, the AANDC (INAC) Inspector, and the KIA. Site specific studies may be required to determine the appropriate final clean up criteria.

5.5 Spills in a Marine Environment

This section provides a guideline for a petroleum product spill response specific to the unique climatic and physiographic features of the Arctic environment and provides general information on typical approaches to dealing with hydrocarbon spills in the marine environment. Hope Bay Mining Ltd. will rely on the Shipping Contractor for spill response while bulk fuel and containerized shipments of hydrocarbon-based products are in transit from the Shipping Port to the Project site. In all instances, the Transport Canada approved HBML *Ocean Pollution Prevent Plan/Oil Pollution Emergency Plan* will take precedence.

The Hope Bay Project maintains marine spill response equipment at the Roberts Bay jetty site. The spill response equipment is stored within 7 Seacans for deployment while barges are being off-loaded. This equipment includes, among other things, floating containment booms and a small skimmer unit designed to address potential spills during the offloading process (see section 1.4.1 for a more detailed inventory).

The following definitions are provided for three “sea conditions” (calm water, protected water, and open water) used in the following discussion (Table 2).

Table 2: Definitions of Sea Conditions

Response Environment	Significant Wave Height (m)	Wind Speed (km/h)
Calm waters	Less than 0.3	Less than 10
Protected water	0.3 to 2	10 to 30
Open waters	2 or greater	30 or greater

5.6 Spill Response in a Marine Environment

5.6.1 General Guidelines

The most effective way to minimize environmental damage is to focus on source control and to prevent product from spreading. As a precautionary measure, during the annual bulk fuel offloads at Roberts Bay, the fuel barges will be encircled with floating skirted spill response booms to provide spill containment.

Slick tracking and surveillance should utilize locally available resources to determine optimum response strategies by:

- Locating brown-color slicks to be skimmed, burned and/or dispersed; and
- Leaving shiny, rainbow sheens to disperse naturally but plan for shoreline protection/treatment, if appropriate.

In breaking waves higher than 1 m, surveillance and monitoring may be the only practical response options.

Table 3 presents descriptions of countermeasures that are recommended for implementation in an uncontrolled environmental incident.

Table 3: Open-water Response at Sea or in Coastal Waters

Environment		Responses			
Response	Product Location	Countermeasures			Feasibility
		Contain/Recover	Burn	Disperse	
Source Control	On surface	Mobile floating barriers Stationary skimmers	Burn on water contained in booms	Vessel dispersant application Arial dispersant application	Recommended
	Underwater	Subsurface barriers			Not recommended
Control of Free Product	On surface	Mobile floating barriers Advanced skimmers	Burn on water contained in booms	Vessel dispersant application Arial dispersant application	
	Underwater	Subsurface barriers			Not recommended
Protection	On surface	Diversion booming	Burn on water contained in booms	Vessel dispersant application Arial dispersant application	
	Underwater	Subsurface barriers			Not recommended

5.6.2 Response Strategies and Methods

Responding to spills from vessels and barges in a marine situation can involve controlling slicks at source and removing product that escapes initial containment. The objective of both operations is to minimize the spreading of spilled product and subsequent environmental impacts. Control methods use similar approaches both “at source” and to deal with remote slicks.

5.6.3 Containment and Recovery

Containment

- Use mobile floating booms, best deployed down drift from the release point, in order to contain and concentrate product.

- Deploy mobile floating booms in U, V or J configurations. Interception of free-floating, thick slicks is not as effective as containment and removal of product at surface.
- Mobile floating booms are effective in currents less than 0.5 m/s (1 knot) and winds less than 35 km/h (20 knots).

Recovery

- Advancing skimmers (Oleophilic Skimmers – units with a recovery mechanism to which oil adheres) are useful: Disc, drum and rope mop skimmers can remove light and medium viscosity oils; brush and belt skimmers can collect heavy oils.
- Large volume advancing skimmers can be used when oil/water separators are available or when there are large accumulations of thick, emulsifying oil.
- Subsurface barriers should be used to contain spilled oil that might sink before it submerges, if possible. Locating submerged oil is difficult, and control and collection of such is even more difficult.
- If brush or belt skimmers cannot collect heavy, floating oil then trawl systems can be tried for recovery.
- Planning adequate storage capacity is critical to the entire response operation to avoid operation bottlenecks.
- Storage options include barges, towable tanks, tankers and/or other means that are appropriate for the type and volume of oil being recovered.

Dispersion

- Within mobile floating barriers, spills must be assessed to determine if dispersants will be effective and then treated quickly by trained personnel:
  - The oil should have a viscosity less than 10,000 cSt (cSt are the units viscosity is measured in, to gauge this in the field the oil should be less viscous than molasses).
  - The temperature of the water should be above the pour point of the oil, i.e., the oil should be freely flowing.
  - Slick thickness should be no more than 0.1 mm thick.
  - Spraying operations should be conducted within 2-5 days of a spill occurring when the oil is un-weathered and can be dispersed.
- Within mobile floating and stationary barriers, both vessels and aircraft can be used to apply dispersants. Operations should be directed from aerial vantage points:
  - Use stock piles of chemicals located strategically to the spill site at dispersant-to-oil ratios of 1:10 to 1:100.
  - Use fixed-wing planes and helicopters on offshore spills.
  - Vessels are more practical for near-shore coastal waters.
  - Record information on dosage rates, areas treated and apparent effectiveness so that the data can be transferred to subsequent responders.

In-situ Burning

- In-situ burning must be quickly implemented, usually by trained personnel. In a remote area, the decision to burn should be based on the following factors:
  - Emulsion should be at least approximately 75% oil, meaning the oil slick has not had a chance to mix well with the water.
  - Slick thickness should be greater than 2-3 mm.
  - Waves should be less than 2 m high and not breaking.
  - Wind speed should be less than 35 km/h (20 knots).
  - Crude oil should be burned within 2-5 days of the spill.

- An ignition system is needed; fire-resistant boom and spotter aircraft should be used, if available.
- A safety plan for response workers is required that addresses the location of ignition, burning and areas that would be affected by the smoke plume.
- Crude oil's high sulphur content would likely present health and safety concerns either in an unburned state or upon ignition.
- A 10 km (6 mile) downwind exclusion zone provides adequate protection for response workers, the public and wildlife.
- Ensure that the risk of secondary fires is minimized, or have the means to extinguish the burn.
- No burning will take place until KIA and/or regulatory authorities give approval.

Protecting Resources

Protecting resources in the path of a marine spill usually involves the deployment of mechanical equipment but may be accomplished by chemical dispersion or burning. The objective of protection is to prevent or minimize contact between the spilled oil and the resource at risk.

- Initially, estimate the direction and speed of movement of the oil. Then identify the resources at risk from the spill and evaluate whether protection operations actions are likely to be successful, and then take the following actions for mechanical containment and removal strategies:
  - Deploy diversion boom with both top and bottom tension members and high reserve buoyancy to exclude or divert oil.
  - Secure and then regularly monitor anchor systems.
- Using stationary skimmer such as smaller oleophilic skimmers, e.g., disc, drum and rope mops units, to remove light and medium viscosity oils for storage in either water – or land based storage systems.
- In storm surges, protection strategies might not work if oil mixes in the surf zone and if booms fail.
- In-situ burning is a possible protection option in near shore waters, using an ignition device(s) in concentrated oil; fire-resistant booms and spotter aircraft should be used, if available.
- A safety plan for the burn operation must be prepared that considers the potential impacts of the burn, amenities at risk and the possible health effects of the smoke plume (e.g. 10 km (6 miles) downwind exclusion zone, sulphur content of crude and the means to extinguish the fire).
- Chemical dispersion is a possible protection technique in coastal waters characterized by:
  - Good flushing.
  - Water depth greater than 10 – 20 m.
- For effective dispersion, oil must meet the following criteria:
  - Viscosity is less than 10 000 cSt, i.e., less viscous than molasses.
  - The temperature of the water is above the pour point of the oil, i.e., the oil is freely flowing.
  - Slick thickness is more than 0.1 mm thick.
- Vessel application is likely to be as, or more effective than, aerial methods if:
  - Dispersant is applied within 2-5 days of spill.
  - The spill covers a relatively small coastal area that can be readily treated with dispersants from vessel.
  - Dispersant supplies and fuel are positioned on vessels and at selected sites onshore so that downtime is minimized.
  - Good access to, and visibility of, slicks exists.
- Information on dosage rates, areas treated and apparent effectiveness should be recorded so that the data can be transferred to subsequent responders.

5.6.4 Shoreline Treatment

- First response activities usually take places on a shoreline only if available resources are not required for source control, recovery of free oil or protection. This might be the case for a land-based spill, e.g. a tank farm, or if all or most of the oil has washed ashore.
- Low pressure, cold-water wash is generally practical and effective before the oil has weathered, i.e. in the early stages of a spill, on:
  - Impermeable (bedrock, man-made) shore types;
  - Fine sediment beaches or flats (sand, mud); and
  - Vegetated shores (marshes, peat, low-lying tundra).
- On sheltered, low wave-energy shores with fine sediment, trenching can be a rapid and effective method for containing stranded oil and preventing further redistribution. Oil in the trench can be removed sorbents or vacuum trucks. If such a system is not available in remote areas, sufficient bags of corn-cobs should be used to absorb the remaining oil in the trench.
- Use manual and/or mechanical removal methods to recover oil on open beaches with wave action. If possible this should be done before the oil/sediments are reworked by wave action, and the oil is potentially buried.
- Following the removal of as much oil as possible mixing (also known as tilling) and sediment reworking (surf washing)should be done to move oiled sediments so that they are exposed to weathering processes, such as evaporation or wave action, to accelerate natural cleaning of an oiled beach. The techniques may involve the use of earthmoving equipment do not involve mechanical removal of oiled sediments from beach for disposal.

Table 4 lists the recommended initial treatment methods according to various shore type in the event of an uncontrolled environmental incident.

Table 4: Recommended Initial Treatment

Environmental Habitat – Shore Type	Recommended Treatment Method
Bedrock	Low pressure cold water wash Manual removal Vacuum system
Man-made solid structure	Low pressure cold water wash Manual removal
Ice or ice covered shores	Low pressure cold water wash Low pressure , warm or hot water wash Manual removal Vacuum system Burning
Sandy beaches	Flooding Low pressure cold water wash Manual removal Mechanical removal Mixing Sediment relocation
Mixed sediment beaches	Flooding Low pressure cold water was Manual removal Mechanical removal Mixing Sediment relocation
Pebble/cobble beaches	Low pressure cold water wash Manual removal Mechanical removal Mixing Sediment relocation
Boulder beaches and rip-rap	Low pressure cold water Manual removal Passive sorbents
Sand flats	Low pressure cold water wash Manual removal Vacuum system Mechanical removal
Mud flats	Low pressure cold water wash Manual removal Vacuum system Mechanical removal
Salt marches	Flooding Low pressure cold water wash Manual removal Vacuum removal Passive sorbents

5.7 Disposal of Materials

At the Hope Bay Project site, the disposal of spilled material and/or contaminated soil is governed under the Nunavut Waters and Nunavut Surface Rights Tribunal Act. A copy of the Act will be maintained on site for reference.

Clarifications and information regarding waste management and disposal issues will also be obtained from the Government of Nunavut and Aboriginal Affairs and Northern Development Canada. As part of the Doris North Project, the landfarm will be completed and available for managing hydrocarbon contaminated soils. An alternate option is to seal the material in 45-gallon drums and transport it offsite to an approved disposal facility in Yellowknife. When hazardous waste is transported off site, the generator (Hope Bay Mining Ltd.), carrier and receiver are registered with the Government of Nunavut's Environmental Protection Services, Department of Sustainable Development, and the Protection Services. Hope Bay Mining Ltd. is registered with the Government of Nunavut as a waste generator. Hope Bay Mining Ltd. ensures that the each material carrier and the receiver of those materials are either registered in Nunavut or in the province or territory in which the company is based.

The Facilities Manager, in consultation with the Spill Response Planning/Advisory Team and the Waste Management Supervisor shall investigate the most appropriate disposal options for the spilled material. In addition to transporting the material offsite Disposal may include burning or placement in the landfarm.

6 Spill Reporting

6.1 Summary

Refer to the Quick Reference Section (Spill Response Communication & Reporting Standard Operating Procedure) for a summary of Spill Response Communication & Reporting Standard Operating Procedure (SOP) for the Hope Bay Project.

6.2 Internal HBML Spill Reporting

In the event of a significant spill the Environmental Superintendent will prepare the internal HBML Accident/Incident report. The report will then be reviewed by the Manger of Environmental Compliance, after review the Environmental Superintendent will enter the report into the Cintellate Database.

6.3 External Spill Reporting

Section 9 (1) of the *Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations (Dated 22 July, 1993)* states:

> ***9. (1)*** *The owner or person in charge, management or control of contaminants at the time a spill occurs shall immediately report the spill where the spill is of an amount equal to or greater than the amount set out in Schedule B.*
>
> ***(2)*** *Where there is a reasonable likelihood of a spill in an amount equal to or greater than the amount set out in Schedule B, the owner or person in charge, management or control of the contaminants shall immediately report the potential spill.*

The Reportable Spills Table in the Quick Reference Section is a reproduction of Schedule B of the *Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations (Dated 22 July, 1993).*

In the event of any spill to the marine environment during annual bulk fuel offloads, the Coast Guard must be notified immediately pursuant to *Pollutant Discharge Reporting Regulations SOR/95-351 (Dated 26 June, 1995)* which states:

> **5(9)** *A report shall be made by the operator of an oil handling facility to a pollution prevention officer.*

In the event that a particular material spill meets or exceeds the amount specified in the Reportable Spills Table in the Quick Reference Section , the Manager of Environmental Compliance will immediately report the spill by telephone to the NT-NU 24 Hour Spill Report Line, Yellowknife, Tel: 867-920-8130 (Fax: 867-873-6924) using the NT-NU Spill Report form. A sample NT-NU Spill Report form is provided as Appendix C.

When making the report, the Manager of Environmental Compliance will provide, to the extent possible, the following:

1. The date and time of spill;
2. The location of spill;
3. The type of contaminant spilled and quantity spilled;

4. The cause of spill;
5. A description of existing containment;
6. Whether spill is continuing or has stopped;
7. The direction spill is moving;
8. Actions taken to contain, recover, clean-up and dispose of spilled material;
9. The name and phone number of a contact person close to the location of spill;
10. The name, address and phone number of person reporting spill; and
11. The name of owner or person in charge, management or control of contaminants at time of spill.

The Manager of Environmental Compliance will not delay making the required report because he/she does not have all of the specified information.

The Manager of Environmental Compliance will be responsible for the submission of the required detailed written spill report to the appropriate agencies within thirty (30) calendar days of the reported spill, after the document has been reviewed by the VP Environmental Affairs. The written report will include, but not necessarily be limited to:

- The reporting person's name and telephone number;
- The name and telephone number of the person/company who caused the spill;
- The location and time of the spill;
- A description of the spill location and of the area surrounding the spill location;
- The type and quantity of the spilled material;
- The cause of the spill;
- The potential effect(s) of the spill;
- Details of action taken or proposed to be taken to remediate affected areas;
- Details of further action contemplated or required;
- The names of agencies on the scene;
- The names of other persons or agencies advised concerning the spill;
- A chronological sequence of events including internal and external notifications;
- Copies of analytical results from external laboratories;
- Analysis of the events leading up to the spill and critique of the internal response and handling of the incident; and
- Measures undertaken or anticipated to reduce the potential for a reoccurrence of the spill at the specific location or other similar locations under the control of Hope Bay Mining Ltd.

If required, continuing or progressive sample collection/analysis will be conducted and reported upon until the completion of all prescribed remedial activities.

In the event that any spill or discharge occurs to the marine environment during the annual fuel offload, the On-Shore Supervisor must immediately contact the regional Canadian Coast Guard station at Tel: 1-800-265-0237. The report will provide to the extent possible, the following:

1. The identity of any ship and oil handling facility involved;
2. The time and location of the discharge or estimated time and location of the probable discharge;
3. The nature of the discharge or probable discharge, including the type and quantity of pollutant involved;
4. A description of the assistance and salvage measures employed; and
5. Any other relevant information.

Additionally, the On-Shore Supervisor will be responsible to submit a written report within 24 hours of any discharge or anticipated discharge of oil to a Transport Canada Marine Safety Inspector and to the Canadian Coast Guard, after review by the VP Environmental Affairs. The report should include the following information:

- Identity of any vessel involved;
- Name and address of the oil handling facility;
- Name and position of the person who is responsible for implementing and coordinating the oil pollution emergency plan;
- Time and location of the discharge or estimated time and location of the anticipated discharge;
- Nature of the discharge or anticipated discharge, including the type of oil and an estimate of the quantity of oil involved;
- Description of the response actions to be taken;
- On scene conditions; and
- Any other relevant information.

The most senior General Manager of Operations (or designate) or a designate will be responsible to attend the scene of any spilled materials to photograph and measure the affected area and will be responsible to engage properly qualified personnel to collect samples of the materials or soils. No person will be permitted to sample or handle spilled materials unless that person has received adequate training in the identification of the hazards associated with the spilled material, the selection and use of appropriate personal protective equipment, and safe sampling procedures.

6.4 Reporting to the Public

In the unlikely event that a spill poses the potential for the general public to be impacted, the VP Environmental Affairs will be the only individual authorized to make contact and inform the public. The VP Environmental Affairs will only initiate such notification after appropriate discussion and approval of the Project Director for Hope Bay, Hope Bay Legal Counsel, VP Regional Environment and Social Responsibility, and others as required, and only after discussion with appropriate representative of the Nunavut government and the Kitikmeot Inuit Association (KIA).

7 Spill Response Training

Training of all Hope Bay Project employees to familiarize them with the Spill Contingency Plan and testing the plan's elements through mock spill exercises is critical to ensuring the success of the plan. Training and training exercises prepare personnel, evaluate the plan holder's ability to respond to a spill and demonstrate to government and to the public that there is adequate preparation should a spill occur.

On-site training at the Hope Bay Project site commences with every employee during their initial site orientation. At that time, every employee is informed that he/she is potentially a First Responder to any spill or unanticipated discharge event and is provided a brief explanation of the actions expected of every First Responder and where to find the First Responder SOP (flow chart) which is included in the site spill kits.

Additionally, more detailed training is provided to select supervisory individuals on a regular basis by the Mackenzie Delta Spill Response Corporation (MDSRC). The instructional sessions include site safety, materials properties and strategies as well as tactics for containment and recovery in-facility, on land and on water spills. A Marine Spill Response Operations Course or the equivalent training will be provided for the On-Shore Supervisor.

Additional on-site training is also provided to a wider employee-base annually by a qualified spill response consultant, which includes the performance of mock spill response exercises under typical operating conditions in conjunction with instructional sessions.

These training programs ensure that all Hope Bay Project personnel understand the procedures in the *Hope Bay Project Spill Contingency Plan,* the hazards of the materials stored on-site, who is responsible for what activities, where to find response equipment and how to operate it, and how to obtain off-site resources.

8 Document Control Record

8.1 Spill Contingency Plan Review and Revision

This *Hope Bay Spill Contingency Plan* is considered an "active" document that will undergo an annual review and be revised as necessary as the project proceeds. The level of detail within the document will continue to increase with subsequent revisions as each revision will incorporate the lessons learned at each stage of the process and will reflect input from the Kitikmeot Inuit Association (KIA), as representative of the surface land owner (the Inuit beneficiaries of the Nunavut Land Claims), local communities, Nunavut Tunngavik Incorporated whom, along with Aboriginal Affairs and Northern Development Canada (AANDC, formerly INAC), hold subsurface mineral rights in the Hope Bay Belt, and other stakeholders who have an interest in how the Hope Bay Project is ultimately operated.

Each revision will be recorded in Table 5.

Table 5: Hope Bay Project Spill Contingency Plan History of Revisions

Revision Number	Revision Date	Description of Revisions	Revised By	Approved By
1	August 2009	Hope Bay Project Spill Contingency Plan, August 2009	SRK Consulting	Chris Hanks
2	Feb. 2010	Update phone numbers	SRK Consulting	Bill Patterson
3	July 2010	Update phone numbers	SRK Consulting	Bill Patterson
4	July 2011	Update channels, figures, included OPPP info, updated phone numbers, revised fuel storage locations	SRK Consulting	Angela Holzapfel

8.2 Plan Review and Revision Responsibility

The Hope Bay Spill Contingency Plan will be reviewed at least once per calendar year and revised as required. Responsibility for the regular review and updating of the Plan is vested in the VP Environmental Affairs, Manager of Environmental Compliance, and the Environmental Superintendent. Revisions will be made to the procedures where necessary to reflect changes in site conditions and any new applicable legislation or regulations. The document will then be submitted for review and approval by the Project Director, General Manager Operations and VP Environmental Affairs of Hope Bay Mining Ltd. Once approved, all relevant personnel will be notified of the revised plan in Aconex, and a new hardcopy will be posted on site bulletin boards along with the Emergency Response Plan. The controlled version (electronic) will be on Aconex.

This, the Hope Bay Project Spill Contingency Plan July 2011, has been reviewed and is approved by:

Document Approval

Position	Name	Signature	Date
VP Environmental Affairs	Chris Hanks		
General Manager of Operations (or designate)	Brad Skeeles		

The re-issuance of this document have been reviewed and approved by the Quality Assurance and Management and are authorized for use within Hope Bay Mining Ltd.

Disclaimer

"This report and the opinions and conclusions contained herein ("Report") contains the expression of the professional opinion of SRK Consulting (Canada) Inc. ("SRK") as to the matters set out herein, subject to the terms and conditions of the agreement dated [HBML.BOC-CM.PSA.003, September 30, 2008] (the "Agreement") between Consultant and Hope Bay Mining Ltd. ("Hope Bay Mining"), the methodology, procedures and sampling techniques used, SRK's assumptions, and the circumstances and constraints under which Services under the Agreement were performed by SRK. This Report is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of Hope Bay Mining, whose remedies are limited to those set out in the Agreement. This Report is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context. In addition, this report is based in part on information not within the control of SRK. Accordingly, use of such report shall be at the user's sole risk. Such use by users other than Hope Bay Mining and its corporate affiliates shall constitute a release and agreement to defend and indemnify SRK from and against any liability (including but not limited to liability for special, indirect or consequential damages) in connection with such use. Such release from and indemnification against liability shall apply in contract, tort (including negligence of SRK whether active, passive, joint or concurrent), strict liability, or other theory of legal liability; provided, however, such release, limitation and indemnity provisions shall be effective to, and only to, the maximum extent, scope or amount allowable by law."

This report, "**Hope Bay Project Spill Contingency Plan**", has been prepared by SRK (Consulting) Canada Inc.

Reviewed by:

Mark Liskowich
Principal Consultant

Revised:

Melissa Pitz
Consultant

9 References

Contingency Planning and Spill Reporting in Nunavut, A Guide to the New Regulations, Environmental Protection Service, Department of Sustainable Development, Government of Nunavut

Consolidation of Environmental Protection Act (R.S.N.W.T 1988, c.E-7) Current to August 29, 2010, Government of Nunavut

Consolidation of Regulation R-068-93 Spill Contingency Planning and Reporting Regulations as provided by the Government of Nunavut website

Guidelines for Spill Contingency Planning, Water resource Division, Indian and Northern Affairs Canada, April 2007

Nunavut Waters and Nunavut Surface Rights Tribunal Act (S.C.2002, c.10) Current to May 5, 2011, Aboriginal Affairs and Northern Development Canada

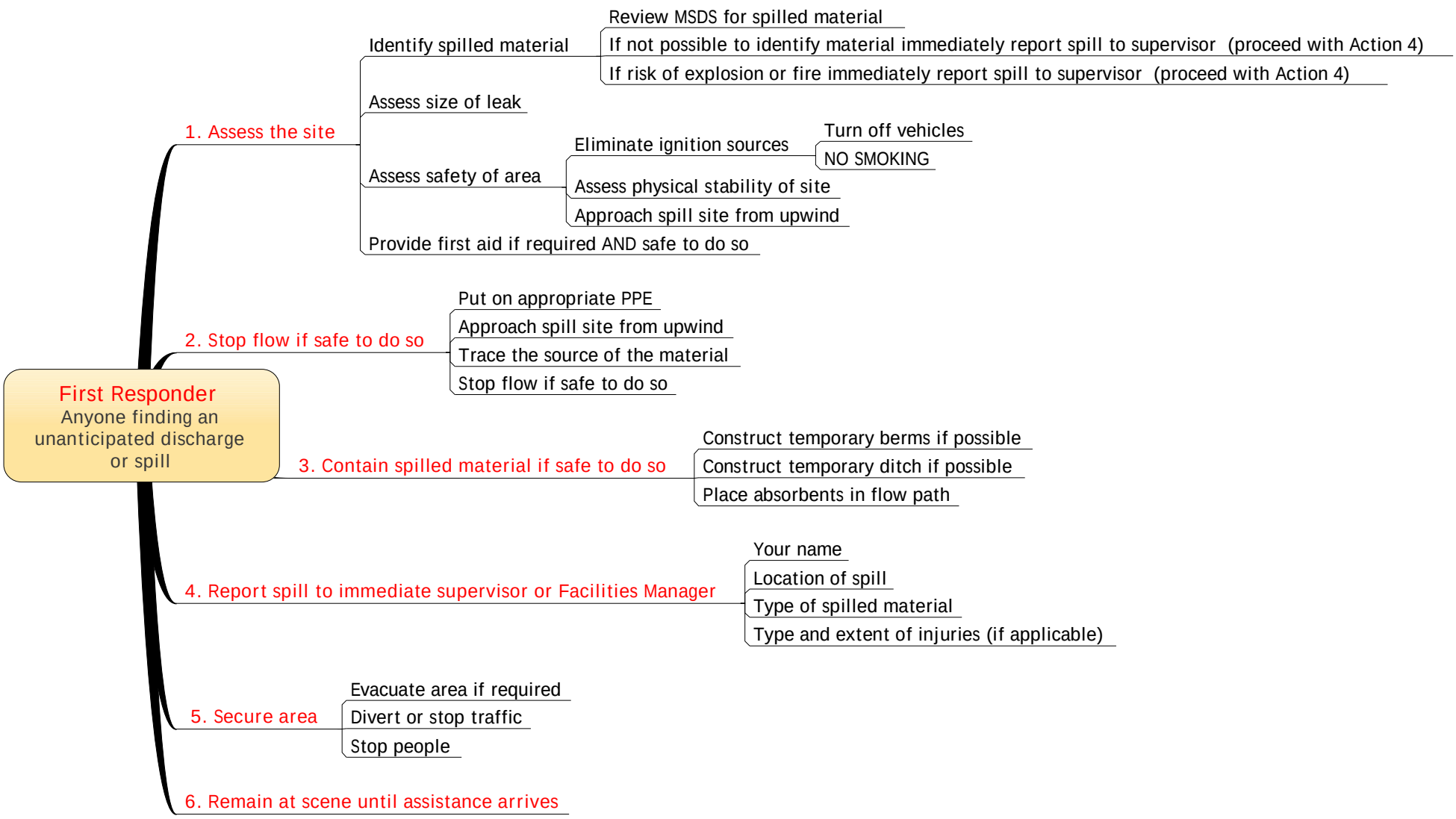
Appendices

Appendix A
Spill Kit Insert

NEWMONT NORTH AMERICA

Hope Bay Mining Ltd. Spill Response Responsibilities

First Responder



Quick References

Site Emergency Phone Numbers

	Day	Night	Camp Room Number
Medic (Doris)	604-759-4693	604-759-4706	C9
Medic (Boston)	604-759-2336		
Emergency Response Team/ Health & Safety	604-759-4694 or 604-759-2291	604-523-4126 or 604-759-4702	C11
Mine Operations Manager	604-523-4128		C1
General Manager of Operations	604-759-2284		C8
Environment Coordinator	604-759-4714 or 604-759-4698	604-759-4710	C4
Security	604-759-4704	604-759-4687	C10
Facilities Manager (Doris)	604-759-4708	604-759-4691	C3
Facilities Manager (Boston)	604-759-2338		

Site Radio Channels

Channel 1	Doris Emergency
Channel 2	Great Slave Helicopters
Channel 3	Nuna/EPCM
Channel 4	BBE/Security/Operations/ESR/HSLP/Doris Warehouse
Channel 5	Geology/Drilling
Channel 6	Boston Emergency
Channel 7	Boston Camp
Channel 8	Boston Use
Channel 9	Boston Use
Channel 10	Boston Use
Channel 11	Geology
Channel 12	Survey
Channel 13	Ladd 1
Channel 14	Ladd 2
Channel 15	Ladd 3
Channel 16	Nuna 77

Appendix B
HBML Accident/Incident Report Form

SECTION 1. ACCIDENT/INCIDENT REPORT

(This page to be completed within the same shift as the event occurrence)

Complete all shaded sections

REPORT NO.

Accident/Incident Category 1: | **Date of Incident:** | **Time of Incident:** ☐ AM ☐ PM

Accident/Incident Category 2:

Accident/Incident Type 1: | **Reported To:** | **Reported By:**

Accident/Incident Type 2:

Location: | **Employer**

Person(s) Involved	Badge #	Department	Supervisor's Name	Manager's Name

Witness(es)	Badge #	Department	Supervisor's Name	Manager's Name

Brief Description of Occurrence

If Spill, indicate volume:

Immediate Action Taken

If spill, estimate quantity in kg of contaminated soil removed:

Consequence Level:

Insignificant	Minor	Moderate	Major	Catastrophic
☐ Level 1	☐ Level 2	☐ Level 3	☐ Level 4	☐ Level 5

Notifications Made:

☐ HSLP ☐ ENV ☐ EA/CR ☐ GM ☐ ERT ☐ Region ☐ Corporate ☐ Government

Insert Photos Here:

Appendix C
NT-NU Spill Report Form

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____-_____
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME		

C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS

F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION	
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION	
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS		

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and e-mailed as an attachment to spills@gov.nt.ca. Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call to the spill line. Forms can also be printed and faxed to the spill line at 867-873-6924. Spills can still be phoned in by calling collect at 867-920-8130.

A. Report Date/Time	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. **Please do not fill in the Report Number**: the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
C. Land Use Permit Number /Water Licence Number	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
D. Geographic Place Name	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. **You must include the geographic coordinates** (Refer to Section E).
E. Geographic Coordinates	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
F. Responsible Party Or Vessel Name	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and e-mail. Use box K if there is insufficient space. **Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.**
G. Contractor involved?	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
H. Product Spilled	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m^2)
J. Factors Affecting Spill	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or environment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. "Page 1 of 2", "Page 2 of 2" etc. **Please number the pages to ensure that recipients can be certain that they received all pertinent documents.** If only the spill report form was filled out, number the form as "Page 1 of 1".
L. Reported to Spill Line by	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	**Leave Blank**. This box is for the **Spill Line's use only**.

Appendix D
HBML Rapid Response System

Introduction

Welcome to the Newmont Rapid Response System

What is Rapid Response?

Rapid Response is a system that aims to mitigate and prevent the escalation of adverse consequences in the event that existing risk management controls fail.

Newmont operations already have emergency or risk management procedures in place and the need to implement evacuation procedures has been previously tested. *Rapid Response* provides a corporate-wide, common and tested procedure that will allow an appropriate response to any circumstance, in any geographic location, in a predictable and measurable manner.

What defines a Rapid Response Incident?

"An incident or issue that can have the potential to seriously threaten Newmont's operations, reputation and the safety and well-being of its employees"

Such an incident might:

- Attract intense public, shareholder and customer scrutiny
- Create financial, legal and governmental impacts on the business
- Threaten the Company's reputation, or even its survival

It is important therefore to be watchful of issues or events which outwardly seem harmless but which have wider implications. Incidents are considered against a Severity Matrix of outcomes to assist the judgment of incident outcomes against the appropriate response.

What does the Rapid Response System aim to achieve?

- Provide appropriate support to an affected Site and/or Region in its technical response to an incident
- Minimize the impact on the Company by consideration of the environmental, strategic, legal, financial and public image aspects of the incident
- Ensure communications are being carried out in accordance with legal and ethical requirements
- Identify actions which need to be taken on a broader scale than can be envisaged by those involved in overcoming the immediate hazards

What are the System priorities?

Newmont has the following protection priorities in the event of an incident or issue:

1. Safety of People
2. Protection of the Environment
3. Safeguarding of Reputation, Assets and Commercial Considerations

Introduction

Your Individual Profile Pack

What is a Profile Pack?

Members of the Rapid Reponses system can now generate an Individual Profile Pack to ensure they have the system information they need when responding to a Rapid Reponses incident. These Profile Packs contain both mandatory and user selectable system information, and be edited and reprinted at anytime. Teams may also submit relevant information that can be stored centrally for all team members to access.

What's in the Profile Pack?

Role Checklists including Pre-Incident Responsibilities

Role checklists have been developed for each role to assist with the management of Rapid Response incidents. Each checklist provides a series of actions, prompts and interfaces to guide and assist strategic team response.

The role checklist for your nominated role(s) will be automatically included in your pack

Additional Rapid Response Documentation

The Rapid Response system contains additional supporting documents to assist team members manage certain elements of an incident. These documents can now be selected for inclusion in your Individual Profile Pack, and are grouped under the following headings:

- Strategic Action Prompt Sheets
- Communication Guidelines
- Identified Risk
- People Strategy
- Recovery Planning
- Forms

Certain documents have been considered mandatory and are included in all Rapid Response Profile Packs. These include standard reporting forms, the Severity Matrix and introduction section.

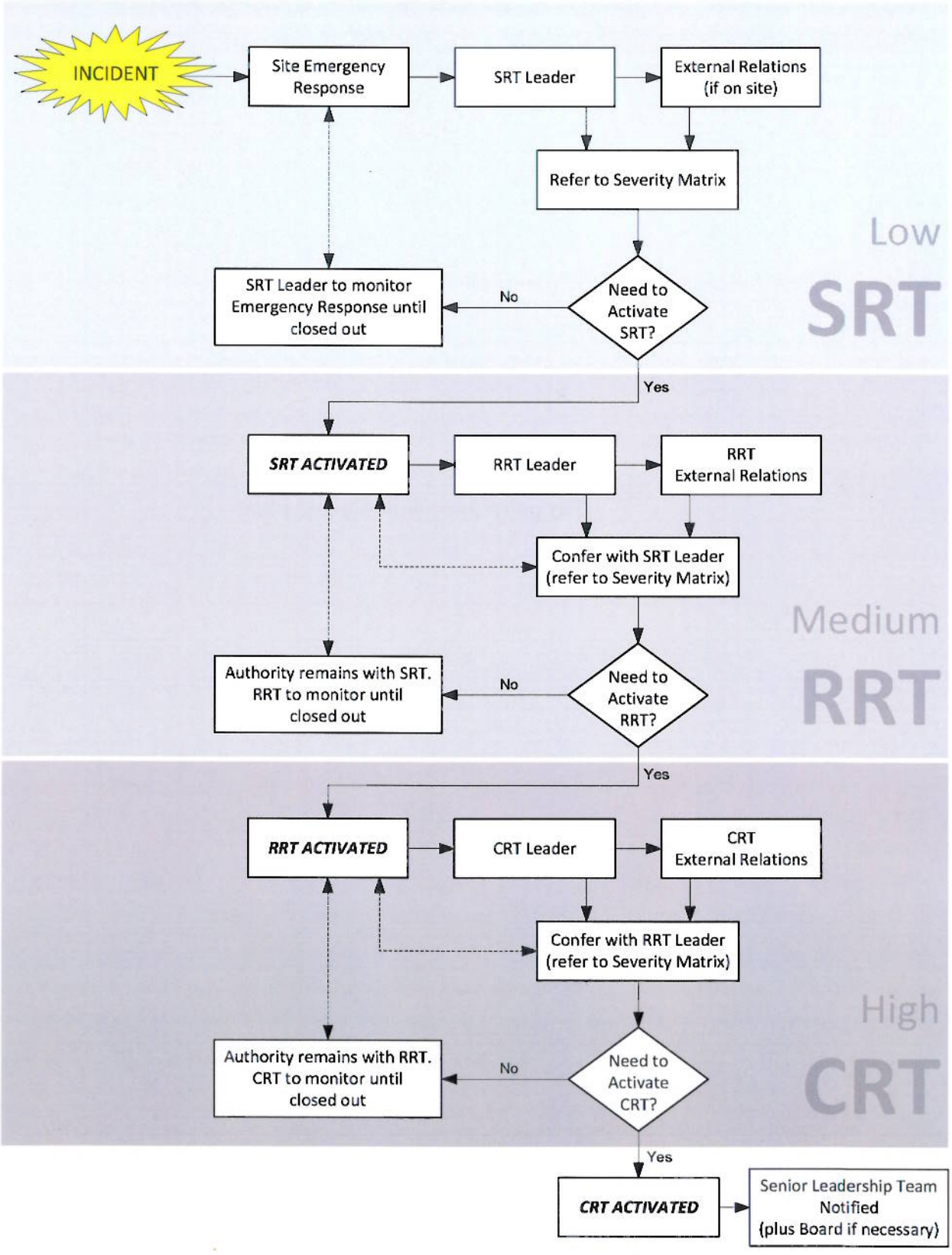
Site Specific Information

Information that is specific to your location may be added to the ***Fast Facts*** section of web site and can then be selected for inclusion in profile packs. This may include maps or local guides, and should be submitted via the Rapid Response Coordinator at your site.

Rapid Response Activation

Rapid Response Activation

The following activation process is followed when considering a potential Rapid Response event. This process confirms notification between Team Leaders and External Affairs during activation, while ensuring continual consultation with the Severity Matrix throughout the process.



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Rapid Response Severity Matrix

All Rapid Response events are considered against the following matrix. It provides a description of the types and/or outcomes of Rapid Response events, the measurement of severity and the teams that would usually be involved.

The highest severity rating for any individual risk factor determines the overall severity rating of the incident or issue.

Response by / Outcome	Low	Medium	High
	SRT	SRT & RRT	SRT, RRT & CRT
Personal injury	Injury involving hospitalization	Single fatality or multiple injuries	Multiple fatalities
Missing personnel	One or more people not accounted for	One or more people confirmed missing	One or more people confirmed missing >24hrs
Terrorism, Kidnap, Extortion, Sabotage	Threats to individuals or structures from known individual or organization	Confirmed threats without actions	Escalated threats or actions involving harm and/or significant damage
Environmental	Low level incident, site contained, requiring regulatory reporting	Incident resulting in offsite contamination and regulatory reporting	Significant incident which has across company implications
Production loss	Reduction of >25% normal capacity for a period of up to one month	Total loss of production or >25% loss for more than one month	Total loss of production for more than one month
Technical difficulty	Inability to operate at design capacity due to known problem	Inability to operate at design capacity due to unknown problems	Continued operating problems >3 months
Major contractor, supplier or partner Issue	No disruption to supply or activities	Supply or services disrupted with threat to production	Joint venture partner in crisis
Financial issue	Site accounting issue with ability to resolve	Cashflow or accounting issues involving multiple sites or no resolution on site	Cashflow or accounting issues requiring public disclosure
Community / NGO action	No immediate likelihood of media interest	Community threat or use of media for publicity	Likelihood of national media attention
Media coverage	No company response warranted	Response required to local or state media article	Response required to nationwide media attention
Regulatory authority action	Action relating to site incident or issue	Action which has implications across multiple sites	Action with company wide implications
Government action	No loss of control	Newmont controlling with higher than normal government interest	Threat of government interference with operations
Civil Unrest	Local disruption with no imminent threat to site	Local disruption with possibility of affecting operations	Civil unrest or hostile threat from change in government
Labor Unrest	Local disruption affecting operations/production	Disruption which has implications across multiple sites	Disruption with company wide implications
Loss of Senior Personnel	Accident/illness adversely affecting normal operational management capabilities	Accident/illness affecting normal regional management capabilities	Accident/illness affecting Newmont corporate management capabilities
Other Criminal Acts	Illegal act which threatens to cause local disruption	Illegal act which threatens to cause national/international disruption	Illegal act which threatens Newmont's corporate governance reputation
Business / publicity opportunity	Low level discussions without commitments	Formal discussion or prepared statement required	Opportunity has company wide implications

Note: Non-operational issues may result in a Medium or High severity ranking and may not involve an SRT or RRT

Rapid Response Activation

What is the Rapid Response System Structure?

Corporate Response Team (CRT)

The CRT is based in Denver and it's primary role is to minimize the financial impact on the Company by assessing the consequences of any incident or issue and managing those with potential enterprise-wide impact whilst sheltering, supporting and advising any RRT and SRT response.

First Flight Team (FFT)

The CRT may establish a First Flight Team (FFT). The primary role of a FFT is to travel to an affected Site or Region and provide direct assistance including adopting relief SRT and/or RRT positions if required.

Note: Once mobilized, FFT members report directly to the Site or Region Rapid Response Team Leader at the affected location.

Region Response Team (RRT)

Based in each Regional head office, the primary role of the RRT is to ensure the well being of people involved in, or affected by, a Newmont incident or issue. This is achieved by providing shelter, support and advice to any operational response and carrying out strategic planning to get Region operations back to normal as quickly as possible whilst liaising with the Newmont CRT.

Note: Some Regions may not have sufficient personnel available to establish a "full" RRT. In this case pre-identified Site personnel may be required to assist the RRT.

Site Response Team (SRT)

Newmont has a Site Response Team (SRT) at each of its operating Sites.

The primary role of the SRT is to oversee the operational emergency response and the well being of people involved in, or affected by, an incident or issue whilst liaising with the RRT to develop plans to get operations back to normal as quickly as possible.

Rapid Response Structure